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OCTOBER 1, 2015 – SEPTEMBER 30, 2016

POWER AFRICA TRANSACTIONS AND REFORMS PROGRAM (PATRP)

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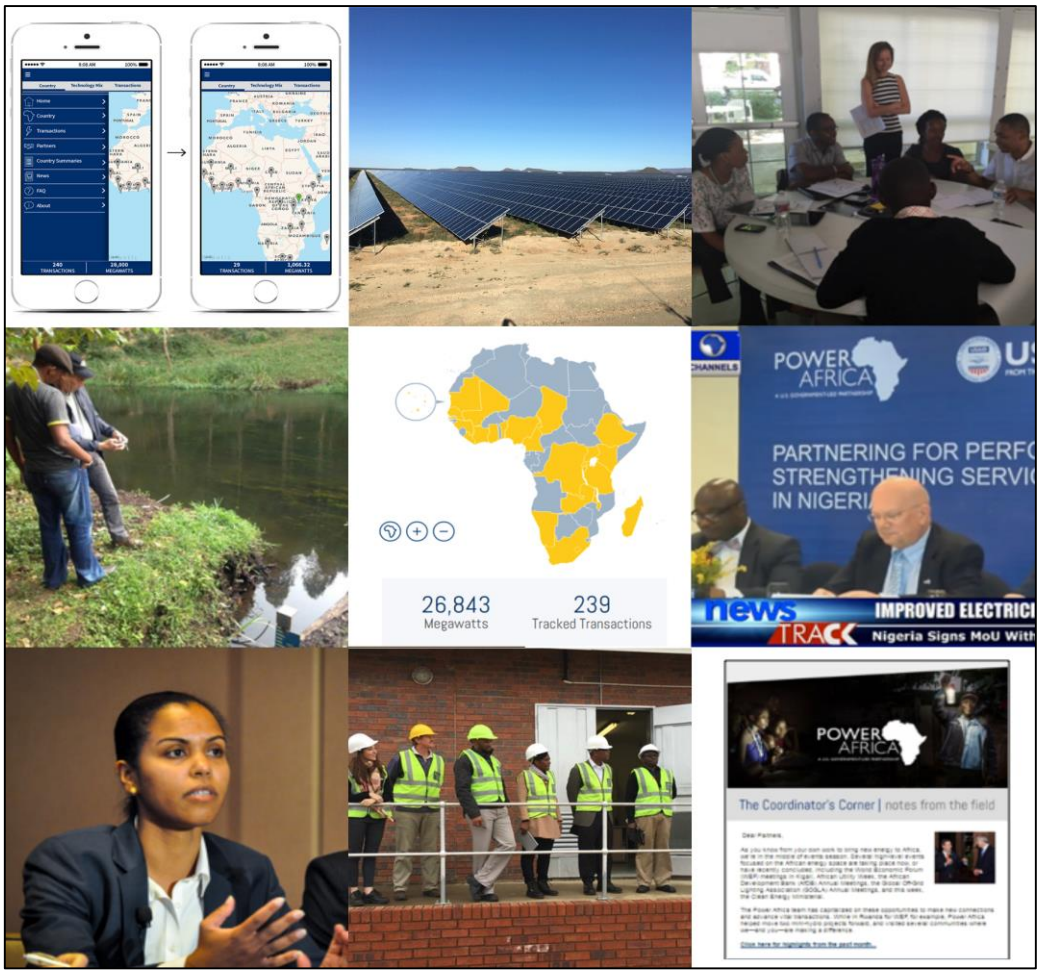

DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

FOREWORD

The Power Africa Transactions and Reforms Program (PATRP), implemented under USAID Contract No. AID-623-C-14-00003, is required to produce an annual report in addition to quarterly reports for each fiscal year. This is the third PATRP annual report.

This annual report highlights the results achieved in FY 2016 (October 1, 2015 to September 30, 2016) by the PATRP team, which is led by Tetra Tech ES, Inc., and supported by Nexant, Inc., and BDO Risk Advisory Services as principal subcontractors. The chief focus of this report is to document progress toward programmatic and broader Power Africa goals. Additionally, this report outlines power sector trends, barriers to private sector participation and investment, challenges faced, and lessons learned.

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ACRONYMS

ACRONYM	MEANING
ADME	Djiboutian Energy Management Agency
AEDC	Abuja Electricity Distribution Company (Nigeria)
AfDB	African Development Bank
AFD	French Development Agency
AG	Attorney General
AGIL	Africa Geothermal International Limited
AGSI	Association of Ghana Solar Industries
ALSF	African Legal Support Facility
AM	Arcelor Mittal
AMCC/GCCA	Global Climate Change Alliance
ANARE	Autorité Nationale de Régulation de l'Electricité (Côte d'Ivoire)
ANER	National Agency for Renewable Energy (Senegal)
APSD	African Plantations for Sustainable Development
APV	Africa Power Vision
ARE/RECP	Alliance for Rural Electrification (ARE) and the Africa-EU Renewable Energy Cooperation Programme (RECP)
AT&C	Accumulated Commercial and Technical (losses)
AUC	African Union Commission
B2B	Business-to-Business
BADEA	Arab Bank for Economic Development in Africa
BEDC	Benin Electricity Distribution Company (Nigeria)
BEE	Black Economic Empowerment Programme (South Africa)
BEO	USAID Bureau Environmental Office
BOOT	Build-Own-Operate-Transfer
BOT	Build-Own-Transfer
BPC	Botswana Power Corporation
BPE	Bureau of Public Enterprises (Nigeria)
BTG	Beyond the Grid
BWG	Budget Working Group
C&I	Commercial and Industrial
CBN	Central Bank of Nigeria
CCGT	Combined Cycle Gas Turbines
CIO	Chief Information Officer
CIP	Country Implementation Plan
CLSG	Côte d'Ivoire-Liberia-Sierra Leone-Guinea (transmission line)
COFIT	Cogeneration Feed-In Tariff (South Africa)
COMASEL	Compagnie Marocco-Sénégalaise d'Electricité
COMESA	Common Market for Eastern and Southern Africa
COP	Chief of Party
COR	Contracting Officer's Representative
COTVET	Council for Technical and Vocational Education and Training (Ghana)
CP	Conditions Precedent
CREE	Mali Commission de Régulation de l'Électricité et de l'Eau
CRM	Customer Relationship Management

ACRONYM	MEANING
CRSE	Commission de Régulation du Secteur de l'Électricité du Sénégal
CSP	Concentrated Solar Power
DCA	USAID's Development Credit Authority
DCOP	Deputy Chief of Party
DFI	Direct Foreign Investment/Investor
DFID	Department for International Development (UK)
DISCO	Distribution Company
DIV	Development Innovation Ventures
DMD	Deputy Managing Director
DO	Development Objective
DOC	Director of Communications
DPM	Deputy Prime Minister (Ethiopia)
EAC	East Africa Community
EAPP	Eastern Africa Power Pool
EC	Energy Commission (Ghana)
ECG	Electricity Company of Ghana
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EDCL	Energy Development Corporation Limited (Rwanda)
EDD	Electricité de Djibouti
EDG	Electricité de Guinée (Guinea)
EEA	Ethiopian Electricity Authority
EEPCo	Ethiopian Electric Power Corporation
EEU	Ethiopian Electric Utility
EIA	Environmental Impact Assessment
EIPC	Electricity Infrastructure Procurement Coordinator
EKEDC	Eko Electricity Distribution Company (Nigeria)
EKT	Ethiopia-Kenya-Tanzania Transmission Interconnector
EKTZ	Ethiopia-Kenya-Tanzania-Zambia Transmission Interconnector
EKZ	Ethiopia-Kenya-Zambia Interconnector
ELPS	Escravos-Lagos Pipeline System (Nigeria)
EMMP	Environmental Monitoring and Mitigation Plan
EOI	Expression of Interest
EPC	Engineering, procurement and construction
EPSRA	Electricity Power Sector Reform Act (Nigeria)
ERA	Energie Rurale Africaine (Senegal)
ERB	Energy Regulation Board of Zambia
ERC	Energy Regulatory Commission (Kenya)
ERP	Enterprise Resource Planning
ESCOM	State power utility (Malawi)
ESIA	Environmental and Social Impact Assessment
EU	European Union
EUCL	Energy Utility Corporation Limited (Rwanda)
EWURA	Energy & Water Utilities Regulatory Authority (Tanzania)
EXIM	Export–Import Bank of the United States
FGN	Federal Government of Nigeria
FEI	Fund for Energy Inclusion

ACRONYM	MEANING
FiT	Feed-in Tariff
FREEDM	Future Renewable Electric Energy Delivery and Management
FSRU	Floating Storage Regasification Unit
FY	Fiscal Year
GCE	Generation Capacity Expansion
GCSA	Government Consent & Support Agreement
GDL	Global Development Lab
GENCO	Generation Company
GEDAP	Ghana Energy Development and Access Project
GETFiT	Global Energy Transfer Feed-in Tariffs Program
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GLOS	Government Letter of Support (Kenya)
GMP	Gas Master Plan (Ghana)
GMR	Gas Market Review (Ghana)
GMSP	Grid Management Support Program (Ethiopia & Kenya)
GoA	Government of Angola
GoCI	Government of Côte d'Ivoire
GoE	Government of Ethiopia
GoG	Government of Ghana
GoK	Government of Kenya
GoL	Government of Liberia
GoS	Government of Senegal
GoT	Government of Tanzania
GRMF	Geothermal Risk Mitigation Facility
GTF	Global Tracking Framework
GTP	Growth and Transformation Plan (Ethiopia)
GUMP	Gas Utilisation Master Plan (South Africa)
GW	Gigawatt
HFO	Heavy Fuel Oil
HOMER	Hybrid Optimization of Multiple Energy Resources
HPP	Hydropower plant
IA	Implementation agreement
IEA	International Energy Association
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IFI	International financial institution
IMF	International Monetary Fund
IPP	Independent power producer
IRB	EAPP Independent Regulatory Board
IRENA	International Renewable Energy Agency
IRP	Integrated Resource Plan
IRRP	Integrated Resource and Resilience Planning
JDA	Joint Development Agreement
JICA	Japan International Cooperation Agency
JUFG	Joint Utilities Finance Group (Ghana)

ACRONYM	MEANING
KenGen	Kenya Electricity Generating Company
KETRACO	Kenya Electricity Transmission Company Limited
KfW	German Development Bank
km	Kilometer
KP	Kenya Power
KTZ	Kenya-Tanzania-Zambia Transmission Interconnector
kV	Kilovolt
kWh	Kilowatt hour
kWp	Kilowatt-peak
LCOE	Levelized costs of energy
LEC	Liberia Electricity Corporation
LFO	Light Fuel Oil
LNG	Liquefied Natural Gas
LOP	Life of Program
LVN	Low-Voltage Network
M&E	Monitoring and Evaluation
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MD	Managing Director
MDB	Multilateral development bank
MEDER	Ministry of Energy and the Development of Renewable Energy Sources (Senegal)
MEM	Ministry of Energy and Minerals (Tanzania)
MERN	Ministère de l'Energie Chargé des Ressources Naturelles (Djibouti)
MINEA	Ministry of Energy and Water (Angola)
MININFRA	Ministry of Infrastructure (Rwanda)
MLM&E	Ministry of Lands, Mines and Energy (Liberia)
MMEWR	Ministry of Minerals and Water Resources (South Africa)
MMO	Mobile Money Operator
MMscfd	Million standard cubic feet of gas per day
MNO	Mobile Network Operator
MNREM	Ministry of Natural Resources, Energy and Mining (Malawi)
MOEP	Ministry of Energy and Petroleum (Kenya)
MOF	Ministry of Finance (Ghana)
MOFP	Ministry of Finance and Planning (Tanzania)
MOP	Ministry of Power (Ghana)
MOPET	Ministry of Petroleum (Ghana)
MOU	Memorandum of Understanding
MoWIE	Ministry of Water, Irrigation & Energy (Ethiopia)
MPN	Mobil Producing Nigeria
MSC	Management Services Contract
MVA	Megavolt Amperes
MW	Megawatt
MWp	Megawatt-peak
MYTF	Multi-Year Tariff Framework
MYTO	Multi-Year Tariff Order
NBET	Nigeria Bulk Electricity Trading, Plc.

ACRONYM	MEANING
NDA	Non-disclosure Agreement
NDPHC	Niger Delta Power Holding Company Limited
NEDCO	Northern Electricity Distribution Company (Ghana)
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NEPAD	New Partnership for Africa's Development
NERC	Nigerian Electricity Regulatory Commission
NERSA	National Energy Regulator of South Africa
NES	National Electrification Strategy (Ethiopia)
NIPP	National Integrated Power Project (Nigeria)
NLNG	Nigeria LNG Limited
NNPC	Nigerian National Petroleum Corporation
Norfund	Norwegian Investment Fund for Developing Countries
O&M	Operations and Maintenance
ODDEG	Office Djiboutien de Développement de l'Energie Géothermique
ODPP	Office of the Director of Public Procurement
OMVG	Organisation pour la Mise en Valeur du fleuve Gambie
OMVS	Organisation pour la Mise en Valeur du fleuve Sénégal
OPEX	Operating Expenses
OPIC	Overseas Private Investment Corporation
OPPPI	Office for Promoting Private Power Investment (Zambia)
PA	Power Africa
PAD	Project Appraisal Document
PAIS	Power Africa Information System
PASER	Plan d'Action Sénégalais d'Électrification Rurale
PATA	Power Africa and Trade Africa
PATRP	Power Africa Transactions and Reforms Program
PATT	Power Africa Tracking Tool
PAYG	Pay-as-you-go
PCOA	Put/Call Option Agreement
PEPT	Programme Electricité Pour Tous (Côte d'Ivoire)
PESRM	PATRP Environmental and Social Review Methodology
PIP	Performance Improvement Plan
PISSA	Project Implementation and Steam Supply Agreement (Kenya)
PIU	Project Implementation Unit
PMP	Performance Management Plan
PNER	Programme National d'Électrification Rurale (Senegal)
PPA	Power purchase agreement
PPF	Project preparation facility
PPP	Public Private Partnership
PRG	Partial Risk Guarantee
PS	Principal Secretary
PSP	Private sector partner
PSS/E	Power System Simulator for Engineering
PURC	Public Utilities Regulatory Commission (Ghana)
PV	Photovoltaic
QIPP	Qua Iboe Power Project
QTAT	Qualified Transactions Assistance Tool

ACRONYM	MEANING
RAED	Renewable and Alternative Energy Directorate (Ghana)
RE	Renewable Energy
REA	Rural Energy Agency (Tanzania)
REEEP	Renewable Energy and Energy Efficiency Partnership
REFiT	Renewable Energy Feed-in Tariff
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme (South Africa)
REPARLE	Renewable Energy to Power Agriculture and Rural Livelihood Advancement (Uganda)
RES	Rural Electrification Strategy (Rwanda)
RF	Results Framework
RFEOIWC	Request for Expression of Interest with Evaluation Criteria
RFP	Request for Proposal
RFQ	Request for Qualifications
RNT	Rede Nacional de Transporte de Electricidade (Angola)
RSD	Regulatory Services Department (Djibouti)
SDFS	Suppressed Demand and Forecast Study
SE4All	Sustainable Energy for All (United Nations)
SENELEC	Société National d'Éléctricité du Sénégal
SEC	Swaziland Electricity Company
SHS	Solar Home System
SIDA	Swedish International Development Cooperation Agency
SIS	System Integration Study
SOGA	System Operation Gap Analysis
SOW	Scope of Work
SNP	Solar Nigeria Project
SPP	Small Power Producer
SPV	Special Purpose Vehicle
SREP	Scaling up Renewable Energy Program
SSA	Sub-Saharan Africa
SSRE	Small-scale renewable energy
STTA	Short-Term Technical Assistance
T&D	Transmission & distribution
TA	Transaction Advisor
TANESCO	Tanzania Electric Supply Company Limited
TARP	Troubled Asset Relief Program (USA)
TCN	Transmission Company of Nigeria
TEDAP	Tanzania Energy Development and Access Project
TOR	Terms of Reference
TREEP	Tanzania Rural Electrification Expansion Project
TRR	Transmission Revenue Requirements
TSA	Transmission Service Agreement
TSO	Transmission System Operator
TSP	Transmission Services Provider
TWG	Transmission Working Group
UN	United Nations
USADF	United States African Development Fund

ACRONYM	MEANING
USAID	United States Agency for International Development
USD	United States dollars
USEA	United States Energy Association
USG	United States Government
USTDA	United States Trade and Development Agency
VAT	Value Added Tax
VfM	Value for Money
VP	Vice President
VRA	Volta River Authority (Ghana)
WAGP	West African Gas Pipeline
WAPCo	West African Gas Pipeline Company
WAPP	West African Power Pool
WB	World Bank
WENRECo	West Nile Rural Electrification Company
WIAP	Women in African Power
WO	Work Order
Wp	Watt-peak
WTE	Waste to Energy
YALI	Young African Leadership Initiative (USA)
ZESCO	Zambia Electricity Supply Corporation

EXECUTIVE SUMMARY

Year three of Power Africa was a one of notable advancement and expansion. The scope and footprint grew to encompass more activities and countries, and the *Power Africa Roadmap* and the Electrify Africa Act set the course for the future. Accordingly, PATRP's support also grew during this time, with the creation of an extensive resource infrastructure spread across 13 or more countries, with more than 70 full-time staff and another 50 active short-term technical advisors and support staff. This will see PATRP well positioned in FY 2017 to accelerate its existing pipeline of transactions towards financial close, and make a tangible impact in the *Beyond the Grid* (BTG) space. PATRP's work in FY 2016 also included new activities, such as turnaround management and loss-reduction programs within the distribution sector, increased assistance to the gas sector, expansion of cross-border transmission interconnections, and targeted policy and regulatory reform to enable increased private sector investment and engagement in the African energy sector.

To help facilitate PATRP's increased level of activities, a new project management approach was adopted at the end of FY 2016. This approach involves creating more synergy between work streams and allowing PATRP to remove roadblocks throughout the energy value chain.

Ultimately, PATRP's work continues to focus on four key objectives:

OBJECTIVE 1: INSTITUTIONAL SUPPORT TO POWER AFRICA COORDINATOR'S OFFICE

One of the most important tasks undertaken under this objective was the development and management of the Power Africa Tracking Tool (PATT), officially launched in January 2016. PATT represents a significant achievement for Power Africa and PATRP, as the tool provides public access to centralized transaction data from across the continent. The PATT app was launched alongside the *Power Africa Roadmap*, which PATRP supported by supplying data to inform megawatt targets, and by providing on-the-ground assessments to inform the *Roadmap*'s action plan. These efforts also laid the groundwork for the expansion of BTG activities across the continent.

To support the enlarged Power Africa footprint, PATRP expanded its team to include an additional DCOP, a Contracts and Field Operations Manager, and other Pretoria-based staff. Additionally, PATRP appointed a replacement Communications Specialist and engaged a new Development Partnerships Specialist – both of whom work alongside staff from the Power Africa Coordinator's Office. PATRP's Communications Specialist, reporting directly to Power Africa's Communications Director (DOC), provided regular support and content for the Power Africa website and email newsletter, which transitioned from a quarterly update to a monthly update in FY 2016.

OBJECTIVE 2: LATE-STAGE TRANSACTION SUPPORT

Over the past year, PATRP expanded its transaction advisory assistance into new countries, and augmented existing support in others. These on-the-ground transaction advisors (TAs) play specialized roles within their focus countries and/or regions, and provide technical, regulatory, and financial expertise across sub-Saharan Africa.

In FY 2016, PATRP facilitated the financial closure of 905 MW of power generation projects in Senegal, Tanzania, and Nigeria. This fell short of PATRP's original FY 2016 target of 1,572 MW, with a number of late-stage transactions not progressing to financial close as expected due to prolonged negotiations over project agreement terms, delayed issuance of government letters of support, or a need to secure additional guarantees to secure lines of credit, among other challenges.[1] PATRP has worked, and continues to work, to remove these barriers, and is optimistic that these late-stage projects will reach financial close in FY 2017. In parallel, PATRP advisors have been advancing early-stage transactions through the project cycle milestones. These efforts were particularly notable in Ethiopia and Malawi, where PATRP was instrumental in supporting frontier independent power producer (IPP) projects. Also of note is PATRP's support for the historic advancement of 14 solar IPP projects in Nigeria, slated to add over 1 GW to the national grid.

Building a healthy pipeline of new transactions has also been a focus. In FY 2016, PATRP added 105 new active transactions to its portfolio, totaling approximately 12,386 MW of potential new generation capacity. An additional 5,000 MW of new proposed transactions were also identified by PATRP advisors, but remain subject to additional vetting and consideration of PATRP/Power Africa support. Together, these numbers compare favorably to the ambitious target of 19,788 MW of new projects to be added to the pipeline in FY 2016.

Building on the PATRP transactions that were identified or inherited into its portfolio in FY 2015, by September 30, 2016, PATRP had a total pipeline of over 165 active Power Africa transactions with 22,031 MW of potential generation capacity. This pipeline includes projects in various stages of development (see Figure 3-10). Moving forward, PATRP estimates that more than 2,400 MW of this pipeline will reach financial close by September 30, 2017 (see Table 3-2).

OBJECTIVE 3: SMALL-SCALE PROJECTS AND RURAL ELECTRIFICATION/MINI-GRIDS SUPPORT

Recognizing the relatively slow start PATRP's BTG program experienced in FY 2015, the last 12 months witnessed a significant ramp-up in activities and personnel, with a renewed focus on contributing towards Power Africa's new connections goal under Pillar 2 of the *Roadmap.* A new SSRE advisor joined the team in January 2016, along with new BTG advisors for Kenya, Nigeria, Rwanda, Uganda, and the East Africa and West Africa Regions – a total of 10 advisors working in 11 countries.

The newly constituted BTG team provided support to USAID/Ethiopia in determining preliminary Levelized Cost of Electricity (LCOE) of rooftop solar, developed a new scope of work and work plan for Ghana that aligns with Power Africa objectives, supported mini-grid developers entering the Kenyan market, assessed the off-grid finance sector in Nigeria to understand the main barriers for off-grid companies to obtain scale-up financing, began a BTG Market Study in Uganda, engaged solar companies in Rwanda, and pushed forward on a range of activities to drive new off-grid development. Most notably, the BTG team began supporting 17 new local companies focused on solar lanterns, home-based solar systems, and micro-grids in both East and West Africa. These efforts are expected to elicit tangible results in FY 2017, with 300,000 targeted new connections.

[1] FY 2016 target is from the approved PATRP PMP, dated July 2016.

PATRP also a delivered a comprehensive report on project preparation facilities (PPFs), which support governments, investors, and developers of power projects by helping to expedite the technical, financial, legal, and regulatory processes involved in energy deals. The report set forth recommendations on how and where Power Africa could best focus any future support to PPFs, and also resulted in the development of the PPF Toolbox, which is a companion resource to the Power Africa Toolbox and contains information on early-stage PPFs that currently operate in sub-Saharan Africa's energy sector.

OBJECTIVE 4: REGULATORY AND INSTITUTIONAL STRENGTHENING AND POLICY REFORM

In FY 2016, PATRP continued to work with stakeholders across the continent to develop and operationalize the Eastern Africa Power Pool (EAPP), promote the Ethiopia-Kenya-Tanzania-Zambia interconnector transaction, and advance the case for new transmission infrastructure under the auspices of NELSAP and national transmission companies in Tanzania and Nigeria, amongst others. Other efforts included enhancement of grid management systems in Ethiopia and Kenya, with strategic introductions of renewable resources into grid management plans, and the development of new grid codes. Loss-reduction programs in Liberia and Nigeria made great advancements: in Liberia, this work is the basis for the turnaround plan for the national utility, and in Nigeria significant commercialization support commenced at three targeted distribution companies (DISCOs).

This objective also focuses on the potential of natural gas as a viable alternative for large-scale electricity projects. PATRP's work on this front is concentrated in West Africa. In Ghana, PATRP's gas advisor supported efforts to maximize Ghanaian gas production to meet its power generation needs. In Nigeria, PATRP deployed a new gas advisor in conjunction with a rapid assessment of the sector, and worked with the Nigeria Bulk Electricity Trading (NBET) on a range of activities designed to unlock the potential of gas-to-power projects, among other strategic endeavors.

Over the past year, PATRP engaged in a number of policy and regulatory interventions intended to advance specific transactions, or to facilitate general energy sector investment. Examples include an assessment of the impact on the energy sector of the Central Bank of Nigeria's (CBN) decision to restrict certain US dollar-denominated transactions; tariff benchmark studies for renewable generation in Ethiopia, Kenya, and Nigeria; developing an IPP framework in Djibouti; project documentation and a procurement package in Ethiopia, initial work on the development of a Community Engagement Framework in Kenya; and, support for the development of a new Renewable Energy Curriculum at the Kenya Power Institute of Energy Studies.

Further, PATRP conducted 7,436.5 person hours of capacity building as part of its activities under Objective 4, which exceeds the FY 2016 target of 3,612 person hours.

Gender equality. PATRP's Gender Advisor led a range of initiatives in 2016 to support PATRP's Gender Integration Strategy, developed and approved in FY 2015. Chiefly, over the course of the year, the Gender Advisor worked to strengthen the capacity of PATRP Transaction Advisors (TAs) to integrate gender into country activities. Web-based and in-person training sessions were shown to help TAs apply a gender lens to their work. The Gender Advisor also continued to support the efforts of the Coordinator's Office to grow and coordinate the Women in African Power (WIAP) network, and helped create opportunities to promote WIAP members and other female experts to speak at major energy

conferences to which Power Africa was invited. The Gender Advisor also provided training on gender and energy to the 2016 YALI Fellows Energy Institute at the University of California-Davis.

Environmental compliance. PATRP worked closely with the Coordinator's Office and the Regional Environmental Office to ensure that Power Africa transactions did not pose significant environmental and social risks (that cannot be adequately mitigated). Over the past year, PATRP's environmental and social (E&S) advisor led the review and screening of 42 transactions using PATRP's environmental and social review methodology (PERSM) checklist. The majority of these transactions were found to have an "acceptable" level of compliance, but three were found to have significant deficiencies and are currently under revision to meet international standards. The PERSM checklist itself was also revised during FY 2016 to improve the flow and value of the document.

1. INTRODUCTION

1.1 THE PROGRAM

President Barack Obama launched Power Africa in 2013 to increase access to electricity for homes and businesses in sub-Saharan Africa, where two-thirds of people live without power. The initiative's early goals were to add 10,000 MW and 20 million connections in a first set of Power Africa focus countries: Ethiopia, Ghana, Kenya, Liberia, Nigeria, and Tanzania. To expand the reach of Power Africa, President Obama announced a tripling of Power Africa's goals in 2014, to 30,000 MW and 60 million connections. To achieve these goals, Power Africa draws on the combined expertise and resources of 12 U.S. Government (USG) agencies, the World Bank Group; the African Development Bank; the Governments of Sweden, Norway, and Canada; the UK Department for International Development; the International Renewable Energy Agency, African governments, and more than 120 private sector partners. Together with African governments, Power Africa is stimulating investment in sub-Saharan Africa's energy sector and bringing critical power projects online. In the initiative's first two years, Power Africa helped facilitate the financial close of transactions expected to add more than 4,300 MW of new, cleaner generation capacity.

Supporting the Power Africa partnership's efforts, the Power Africa Transactions and Reforms Program (PATRP) provides technical assistance, capacity building and transaction support services from a base office in Pretoria, South Africa. In addition to transaction advisory assistance, PATRP also performs tasks related to objectives such as power sector reform, commercialization activities, and institutional support to the Power Africa Coordinator's Office. These activities are represented in the four overarching objectives set forth in PATRP's contract:

OBJECTIVE 1: Institutional Support to Power Africa Coordinator's Office
OBJECTIVE 2: Late-Stage Transaction Support
OBJECTIVE 3: Small-Scale Projects and Rural Electrification/Mini-Grids Support
OBJECTIVE 4: Regulatory and Institutional Strengthening and Policy Reform

A. Electricity Transmission & Distribution (T&D)/Regional Trade, and Institutional Strengthening of Power Pools
B. Policy and Regulatory Reform
C. Natural Gas
D. Mobilizing Finance and Building Institutional Capacity

1.2 OVERVIEW OF ACTIVITIES

As Power Africa's scope and reach expanded over the past year, so too did PATRP's activities. The release of the *Power Africa Roadmap* – and its organization around the three strategic pillars of Generation, Connections, and Unlocking Energy Sector Potential – helped to further define and shape PATRP's work. PATRP's main area of support remains the development of a pipeline of power projects, along with the in-country transaction advisory services that help bring late-stage projects to financial close. To align with the goals set out in the *Roadmap*, PATRP's work in FY 2016 (and moving forward) also encompassed an increase in turnaround management and loss-reduction work in Nigeria and

Liberia, unlocking the gas-to-power potential in Nigeria, expansion of cross-border transmission interconnections in East Africa through the EAPP and NELSAP, and targeted assistance in developing and implementing policy and regulatory frameworks that promote private sector engagement across the sector (e.g. competitive procurement in Ethiopia). Additionally, PATRP's augmented *Beyond the Grid* (BTG) team accelerated the pursuit of new connections through direct support to solar home systems and micro-grid private sector developers. PATRP also helped develop innovative financing mechanisms for transactions of all sizes.

As outlined in Section 1.3 below, PATRP moved to a Country Implementation Plan approach in FY 2016, which is creating more synergy between work streams and allowing PATRP to remove roadblocks throughout the energy value chain. This, in turn, enables more investment, improves efficiency, and advances Power Africa's MW and connections goals.

1.2.1 OBJECTIVE 1: INSTITUTIONAL SUPPORT TO THE POWER AFRICA COORDINATOR'S OFFICE

PATRP support to the Coordinator's Office has evolved significantly over the first few years of the contract, and this trend continued in FY 2016. Some responsibilities undertaken by PATRP early on, such as partner relationship management, have now been mostly absorbed by the Coordinator's Office directly, due to new resources added at USAID and elsewhere within USG. PATRP, therefore, has been able to shift its focus and emphasis to the advancement of transactions and expansion of electricity access.

In Pretoria, PATRP manages and leads program implementation, and oversees all PATRP field activities across the continent. This includes reporting, quality control, and overall monitoring and evaluation (M&E) of the program. PATRP Pretoria also provides 'technical backstopping' of country or regional teams, including deployment of additional resources to the field when necessary to address barriers to transactions, and to provide specialized expertise to support specific transactions. In Washington, PATRP supports the vetting and due diligence of new Power Africa Private Sector Partners, and provides limited IT support for the Customer Relationship Management (CRM) platform used by Power Africa Relationship Managers, and the Power Africa Information System (an M&E tool).

Of course, one of the most important tasks undertaken under this objective has been the development and management of the Power Africa Tracking Tool (PATT), officially launched in January 2016. See Section 3 of this report for further details on PATT and its functionality.

1.2.2 OBJECTIVE 2: LATE-STAGE TRANSACTION SUPPORT

PATRP's targets under this objective are focused on bringing late-stage power generation, transmission, and distribution projects to financial closure, as well as developing a pipeline of power generation projects at all stages. By deploying expert transaction advisors in Power Africa countries across the continent, PATRP helps facilitate business relationships between African governments, private sector developers, donors, and other stakeholders. Transaction advisors operate under the guidance of the senior transaction advisor, who is based in Pretoria.

1.2.3 OBJECTIVE 3: SMALL-SCALE PROJECT AND RURAL ELECTRIFICATION/MINI-GRID SUPPORT

PATRP's small-scale renewable energy (SSRE) activities under Objective 3 provide direct support to Power Africa's *Beyond the Grid* sub-initiative, which focuses on the advancement and rollout of clean and hybrid energy solutions for communities, homes, and businesses that are not – and may never be – connected to a national grid. *Beyond the Grid* (BTG) works with private investors and other organizations to increase generation and improve access, helping to meet Power Africa's connections goals along the way. SSRE projects are defined as renewable electricity projects up to 10 MW, although PATRP's contract does foresee some flexibility on this threshold. Further, this limit is for individual project sizes and is not applicable to portfolios of smaller projects that aggregate to well above 10 MW. Only electricity projects qualify; household energy activities for cooking, heating and small-scale rural industrial projects such as brick making, baking, and drying agro-produce are excluded. In FY 2016, PATRP's BTG work stream and resources expanded to include the placement of resident advisors in a majority of the countries, and deployment of a new small-scale renewable energy (SSRE) advisor and supporting staff member in Pretoria.

1.2.4 OBJECTIVE 4: REGULATORY AND INSTITUTIONAL STRENGTHENING AND POLICY REFORM

The concept behind Power Africa is that catalytic transactions can be used to identify needed improvements in the enabling environment. Addressing these issues in support of a given transaction leads to a strengthened enabling environment, which ideally promotes additional market-driven development and increased investment. Energy sector reform in Africa generally requires changing a market dominated by a government monopoly and operated by an inefficient state-owned utility. Successful reform results from a continuous process of improvement backed by a powerful champion to accomplish, among other things:

- Cost-reflective tariffs
- Profitable and sustainable commercial operations
- Ability to effectively manage new capacity additions/system expansions
- Effective, independent and transparent legal and regulatory mechanisms
- Sound load forecasting and system planning
- Procurement policies and practices aligned with international best practices
- Effective capital construction planning and management processes
- Enabling energy policy and market-oriented energy laws
- Independent, effective and transparent regulation

In FY 2016, PATRP helped to strengthen the enabling environments of Power Africa countries across the continent, as evidenced by Table 1-1. In this context, it is worth noting that PATRP conducted 7,436.5 person hours of capacity building as part of its activities under Objective 4, which is more than double the target of 3,612 person hours set for FY 2016.

Table 1-1: Strengthening Enabling Environments

Type of Support	Countries	Examples of Work
Regulatory Strengthening	5	Development of geothermal regulatory framework in Ethiopia; renewable energy tariff benchmark study and grid integration/mini-grid legal framework development in Kenya; gas market review in Ghana
Capacity Building & Knowledge Sharing	6	LEC loss-reduction study in Liberia; support to NBET and TCN on negotiating PPAs and establishing cost reflective tariffs in Nigeria; assistance to NELSAP with transmission projects; support to the Kenya Power training institute, and capacity building to Kenya Power on solar PPAs; PPA and LNG import policy workshops in Ghana; PPP workshop in Tanzania
Policies & Planning	8	Support with IPP legal and regulatory framework development in Djibouti; Gas Sector Policy and Gas Pricing Policy in Ghana

Objective 4 also includes technical assistance for the gas sectors of Ghana and Nigeria, electricity transmission and distribution, and cross-border trade. In this context, PATRP actively supported grid management work in Ethiopia and Kenya, including their moves to more economic and reliable power systems that make better use of natural resources. PATRP also engaged in capacity building and targeted assistance within the Eastern Africa Power Pool (EAPP), the Tanzania Electric Supply Company (TANESCO), the Nigerian transmission system operator (TCN) and three Nigerian DISCOs, by providing financial, legal/regulatory and technical subject matter experts.

1.3 COUNTRY IMPLEMENTATION PLANS

In FY 2016, PATRP transitioned from a Work Order System to Country Implementation Plans, which promote a holistic programmatic approach to PATRP's objectives in each country. This shift was also reflected in the PATRP Work Plan for FY 2016, and incorporated the supplemental scope of work agreed with USAID at the end of March 2016, which saw PATRP's footprint extending into new countries, and expanding its existing work streams and associated resources in others.

A breakdown of PATRP Country Implementation Plans is outlined in Table 1-2.

Table 1-2. PATRP Country Implementation Plans (as of September 30, 2016)

CIP #	Description
CI-EA-002	Country Implementation Plan East Africa Regional
CI-DJ-021	Country Implementation Plan – Djibouti
CI-WA-004	Country Implementation Plan West Africa Regional
CI-ET-007	Country Implementation Plan – Ethiopia
CI-KE-008	Country Implementation Plan – Kenya
CI-TZ-009	Country Implementation Plan – Tanzania
CI-GH-010	Country Implementation Plan – Ghana
CI-LI-011	Country Implementation Plan – Liberia
CI-NI-012	Country Implementation Plan – Nigeria
CI-ZM-019	Country Implementation Plan – Zambia
CI-RW-020	Country Implementation Plan – Rwanda
CI-AN-022	Country Implementation Plan – Angola
CI-MA-023	Country Implementation Plan – Malawi
CI-SE-024	Country Implementation Plan – Senegal
CI-ZA-017	Country Implementation Plan – Coordinator

1.4 RESULTS

PATRP is required to track performance against a number of indicators, which are derived from the Power Africa Monitoring & Evaluation Plan, to include capacity building efforts and development of laws and policies. These results are outlined in detail in Section 8 of this report. If certain results were not achieved, we have set forth our reasoning under the relevant parts of Section 3, and more generally in Section 8. A summary of overall results is presented in Table 1-3 below.

Table 1-3: Summary of Overall Results

				FY 2015		FY 2016		FY 2017
Indicator Name	**Total Targets Base Years (May/14 - Sept/17) & Expansion[2]**	**Cumulative Actual (May/14 - Sept/16)**	**% Actual vs Target (May/14 - Sept/16) [3]**	**Target FY15**	**Actual FY15 (May/14 - Sept/15)**	**Target FY16**	**Actual FY16**	**Estimated Target FY17**
Number of new grid and off-grid projected direct connections; Unit #	600,300	0	0%	0	0	300	0	600,000
Generation Capacity Pending Financial Closure; Unit MW	28,488	22,031.52	101%	2,100	9,644.8	19,788	12,386.7	6,600
Transactions[4] Pending Financial Closure; Unit #	192	163	85%	70	58	122	105	0
Generation Capacity Reached Financial Closure; Unit MW	4,543	1,572.5	75%	525	667.5	1,572	905	2,446
Transactions Reached Financial Closure; Unit #	15	7	47%	6	3	9	4	0
Generation Capacity Commissioned; Unit MW	536	5	N/A	0	0	0	5	536
Transactions Commissioned; Unit #	0	1	100%[5]	0	0	0	1	0
Utilization of Risk Mitigation Measures; Unit #	7	8	114%	2	4	5	4	0
Training and Capacity Building Activities; Unit: Number of person hours trained	6,832	9,710.5	237%	480	2,275.0	3,612	7,436.5	2,740

[2] The target numbers are drawn from approved PMPs (July 2015 and July 2016), approved FY 2016 Work Plan and proposed FY 2017 Work Plan.

[3] The percentage completed includes FY 2017 targets.

[4] The indicators that reflect number of transactions will no longer have targets but will be tracked and reported by PATRP. These indicators provide contextual assessment of the country or regional pipeline and aids in the analysis of performance management of both the pipeline health and the engagement level of the transaction and technical advisors.

[5] Some indicators do not have targets, although PATRP reports on achievements. These indicators are those directly linked to Generation Capacity Reached Financial Closure. These include Number of Transactions, Risk Mitigation Tools, and GHG Reduction. These indicators are dependent on different technologies, country risk positions etc. Therefore, PATRP will report on the results without specific targets.

				FY 2015		FY 2016		FY 2017
Indicator Name	**Total Targets Base Years (May/14 - Sept/17) & Expansion[2]**	**Cumulative Actual (May/14 - Sept/16)**	**% Actual vs Target (May/14 - Sept/16)[3]**	**Target FY15**	**Actual FY15 (May/14 - Sept/15)**	**Target FY16**	**Actual FY16**	**Estimated Target FY17**
Greenhouse Gas Emissions Reduced; Unit Metric tons Co_2e	6,581	10,661	162%	6,581		0	10,661	0
Aggregate Losses-Abuja	7.5%	13%	173.3%	5%		7.5%	13%	7%
Aggregate Losses-Eko Lagos	7.0%	12%	171.4%	5%		4.5%	12%	7%
Aggregate Losses-Benin	7.5%	7%	93.3%	5%		7.5%	7%	7%
Policy; Unit #(Actions)	39	53	96%	3	10	15	43	21
Policy; Unit # (implemented)	10	17	N/A	0	0	0	17	10
Kilometers of Power Lines pending financial close; Unit KM	10,080	3,009	30%	0	0	10,080	3,009	0
Kilometers of Power Lines reached financial close; Unit KM	526	579	110%	0	0	263	579	263
Substation Capacity Added; Unit MVA	300	0	0%	0		150	0	150
Transmission Projects that are pending Financial Close; Unit #	14	13	93%	0		14	13	0
Transmission Projects that have reached Financial Close; Unit #	2	2	100%	0	0	2	2	0
Increased gas supply and availability to power plants; Unit MMcf3	300	0	0%	0	0	0	0	300

				FY 2015		FY 2016		FY 2017
Indicator Name	**Total Targets Base Years (May/14 - Sept/17) & Expansion[2]**	**Cumulative Actual (May/14 - Sept/16)**	**% Actual vs Target (May/14 - Sept/16)[3]**	**Target FY15**	**Actual FY15 (May/14 - Sept/15)**	**Target FY16**	**Actual FY16**	**Estimated Target FY17**
Improved revenue at distribution companies; # of regularized customers	35,000	35,000	N/A	0	0	0	35,000	35,000
Additional revenue generated at DISCOs due to regularization of existing consumers; Unit Million Naira	209,101,000	289,000,000	N/A				289,000,000	209,101,000

2. PROJECT ORGANIZATION

2.1 OVERVIEW

The PATRP team is led by Tetra Tech, ES, Inc., as the prime contractor, with Nexant, Inc., and BDO Risk Advisory Services as principal subcontractors. Other services are provided by Aurecon, McKinsey and a number of small businesses. FY 2016 saw a realignment of contractor and subcontractor relationships, as Tetra Tech established a corporate office in South Africa. This move led to a decreased reliance on BDO for staffing and support services at the PATRP Pretoria office, as well as several PATRP field offices.

Table 2-1 summarizes PATRP's principal team members and their responsibilities.

Table 2-1. Core PATRP Team Members

Position	Responsibility
Chief of Party (COP)	Program leadership + environmental + communications
Deputy COP (Program Management)	Program leadership + M&E
Deputy COP (Technical)	Quality Control + technical lead on transmission/distribution-related work
Assistant COP	Administrative functions + daily operations
Contracts and Field Operations Manager	Subcontractor management, compliance + daily operations
Senior transaction advisor (STA)	Leadership of TAs + technical assistance to USAID
Senior Project Manager	Manage the tracking of Power Africa Projects and maintenance of the Power Africa Tracking Tool (PATT)
SSRE Advisor	Identify and develop small-scale renewable energy projects + BTG lead
Policy and Institutional advisor	Power sector governance and policy-related goals
Transaction Advisors	Maximize PATRP objectives in their respective countries/regions
Short-term Technical Advisors (STTA)	Provide specialized technical skills
M&E Specialist	Establish M&E system, manage M&E activities for PATRP
Environmental Specialist	Environmental and social review of, or due diligence on, transactions
Gender Specialist	Promote gender equality and female empowerment

The PATRP office is in Pretoria, South Africa, conveniently located near the Power Africa Coordinator's Office at USAID. This office houses the program's leadership, including the COP, Assistant COP, two DCOPs, the senior transaction advisor, small-scale renewable energy advisor, policy and institutional advisor, and contracts and field operations manager. PATRP's M&E team, environmental advisor, Gender Advisor, budget team, and administrative staff are also based here. The majority of staff in the Pretoria office are South Africans or nationals from other African countries.

Figure 2-1: PATRP Pretoria Staff

PATRP's field-based transaction advisors and technical specialists operate as individual, country- or regional-specific units, reporting back to the program leadership using a matrix approach. This approach empowers the lead transaction advisors to make localized decisions relative to needs and opportunities on the ground.

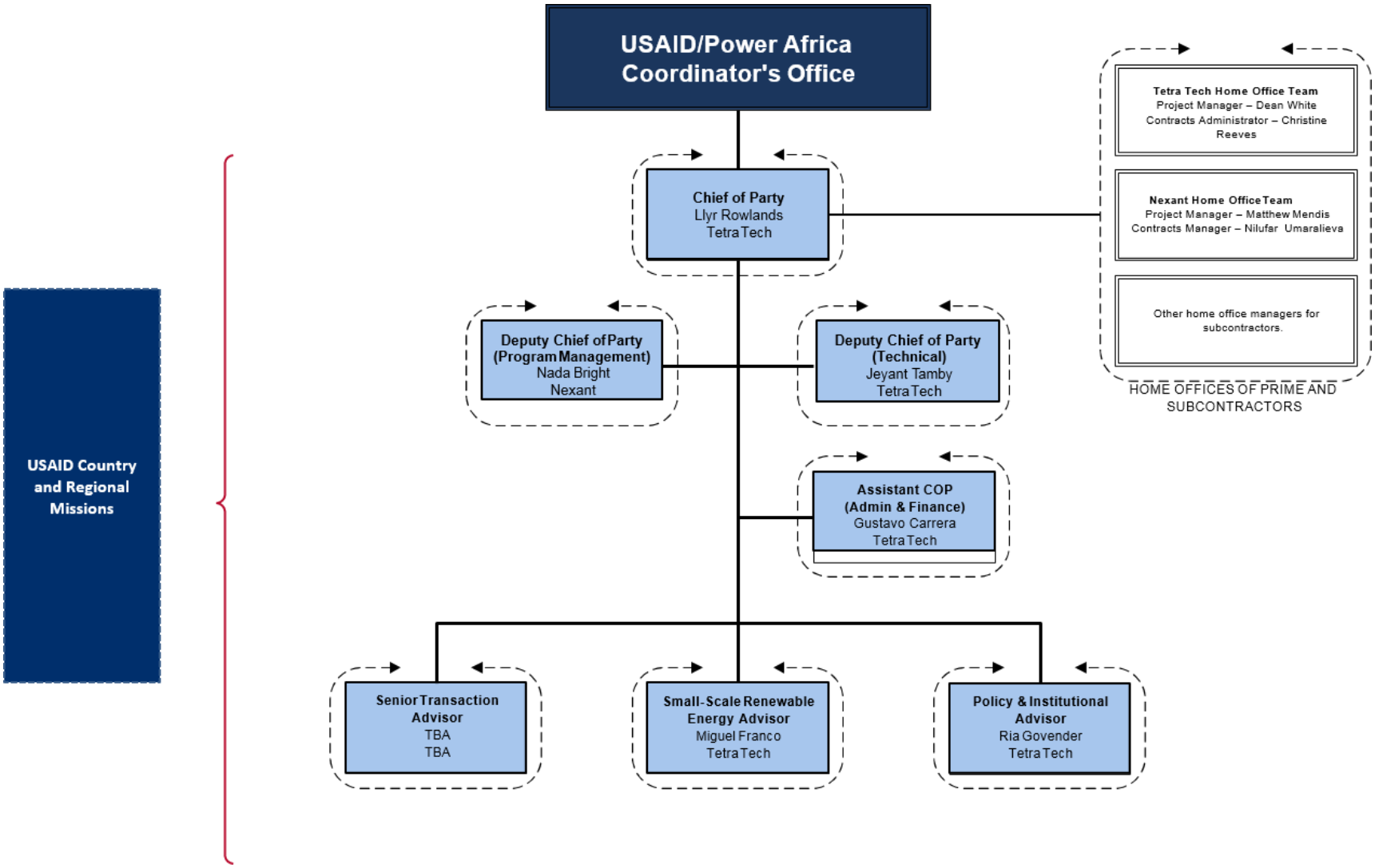
2.2 CURRENT PROGRAM ORGANIZATION

An updated staffing plan was shared with USAID in March 2016 as part of the expanded scope of work. It provided an overview of the program's staffing together with a breakdown of the roles and responsibilities of staff members and organizational structure. As the program responds to Power Africa's needs and conditions on the ground, the staffing plan will be updated accordingly.

Figure 2-2 shows the highest level of the program's organization as of the close of the reporting period.[6]

[6] Note that the PATRP senior transaction advisor (STA) left post in August 2016, and a replacement is expected to be named in Q1 of FY 2017.

Figure 2-2. Highest-Level of PATRP Team Organization



3. SUMMARY OF PROGRESS

3.1 OBJECTIVE 1: INSTITUTIONAL SUPPORT

3.1.1 STAFFING AND DIRECT SUPPORT TO THE POWER AFRICA COORDINATOR'S OFFICE

Following the supplemental scope of work agreed with USAID at the end of March 2016, the PATRP team was augmented by staff additions across the continent. As Power Africa and PATRP's footprint grows, so too does the team needed to successfully manage new and expanded work streams. In direct support to the Coordinator's Office, PATRP appointed a replacement Communications Specialist and engaged a new Development Partnerships Specialist, who serves as a member of the Power Africa Development Partnerships team, supporting relationships with major bilateral and multilateral donors and technical partners, with which Power Africa has formal partnership agreements. At the PATRP Pretoria office, an additional DCOP was appointed to manage technical elements of the initiative – particularly related to transmission and distribution projects – and to provide quality control. PATRP also realigned its SSRE team by deploying a new Lead SSRE Advisor and Regional BTG Advisor to post. Also in FY 2016, the PATRP Pretoria team added the following staff to support the initiative:

- M&E Specialist
- Contracts and Field Operations Manager
- Project Management Assistant/PATT Assistant

3.1.2 POWER AFRICA TRACKING TOOL (PATT)

A key focus for PATRP during FY 2016 was the development and refinement of the public and internal versions of the Power Africa Tracking Tool (PATT), in preparation for its release at the Powering Africa Summit in Washington, DC in January. In the lead up to launch, PATRP:

- provided input for PATT "frequently asked questions" (in preparation for the PATT public launch);
- worked with the Power Africa team and Ogilvy on the integration and launch of the Power Africa website and map with PATT data;
- prepared country summaries and uploaded them into PATT;
- obtained PATT app usage statistics and submitted to the Coordinator's Office; and,
- incorporated feedback received from POCs and TAs, and updated transaction leads in the PATT database.

The PATT app for iPhone was well received by Power Africa Partners and Summit attendees alike, and has now been downloaded more than 1,000 times.

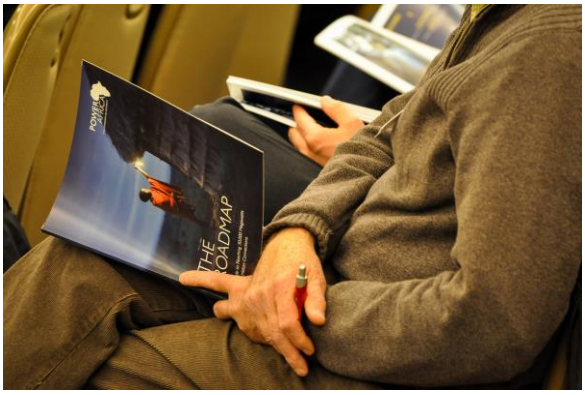
Figure 3-1: PATT iPhone App

PATT represents a significant achievement for Power Africa and PATRP, as the tool provides public access to centralized transaction data from across the continent. Having this information at hand enables Power Africa's private sector partners and other players in the African energy sector engage in a more transparent market. PATT will also inform financing opportunities and drive deal flow in a range of energy technologies. Since its public launch, the PATT iPhone app has been updated and upgraded, and a new version was released in June 2016 in consultation with USAID's Office of the Chief Information Officer (CIO). This entailed a host of technical and branding-related changes. Thereafter, PATRP has continued to work on functional enhancements to PATT and developed Web 2.0, Apple 2.0, and Android 2.0 versions, which are expected to be released in early FY 2017.

3.1.3 PATT LAUNCH AND ROADMAP RELEASE

The PATT app was launched alongside the *Power Africa Roadmap* at the Powering Africa Summit in Washington, DC, in January 2016. While PATRP was not directly involved in the development of the *Roadmap*, PATT data maintained by PATRP was used to inform the megawatt and connections reporting and targets outlined in the *Roadmap*, and on-the-ground assessments performed by PATRP staff in-country provided an overview of necessary activities for the action plan laid out in the *Roadmap*. These efforts also laid the groundwork for the expansion of BTG activities across the continent.

Figure 3-2: Photos from the Power Africa Roadmap release events at the 2016 Powering Africa Summit



Additionally, the PATRP Communications Specialist provided draft talking points, promotional content, and graphic design for *Roadmap*-related materials (such as those illustrated in Figure 3-3), as well as on-site support during the launch events in Washington, DC. Additionally, to reinforce Power Africa's critical role in facilitating power project financing, PATRP's Deputy Chief of Party spoke on a related panel at the Powering Africa Summit, shortly after the *Roadmap* was released.

Figure 3-3: Roadmap 1-pager produced for the launch event

Figure 3-4: Nada Bright (left), PATRP's Deputy Chief of Party, speaking on a panel at the Powering Africa Summit

3.1.4 POWER AFRICA WEBSITE AND MONTHLY NEWSLETTER

PATRP's Communications Specialist, reporting directly to Power Africa's Communications Director (DOC), provided regular support and content for the Power Africa website and email newsletter, which transitioned from a quarterly update to a monthly update in FY 2016. As part of this transition, the PATRP Communications Specialist led the redesign of the email newsletter template (see Figure 3-5), and worked with the DOC to develop an editorial calendar for interagency use.

For each edition, the PATRP Communications Specialist drafted topical stories, provided a news clips and analysis memo, and performed quality control tasks. On an ongoing basis, the PATRP Communications Specialist maintained the growing list of newsletter subscribers, and managed event invitations, as needed.

Additionally, PATRP often provided transaction, country updates, or other information for the Power Africa website, as requested by the Coordinator's Office. And, as mentioned in Section 3.1.2, PATRP worked directly with the Power Africa team and Ogilvy on the PATT map for the Power Africa website, as illustrated in Figure 3-6, below.

Figure 3-5: Screenshot of Power Africa monthly email newsletter

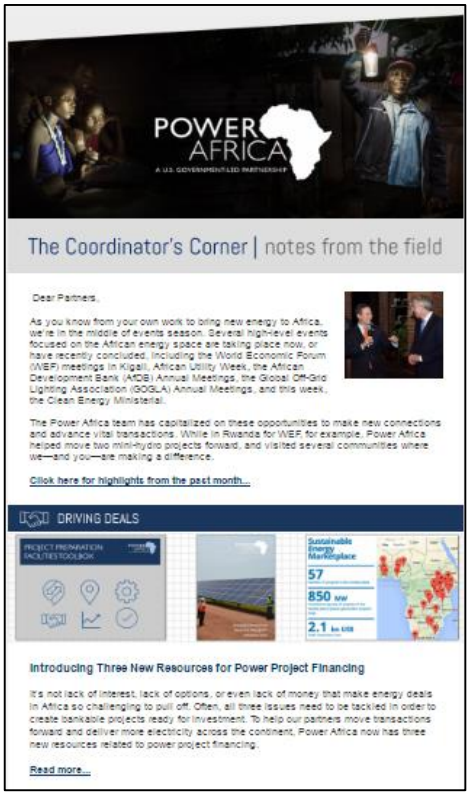
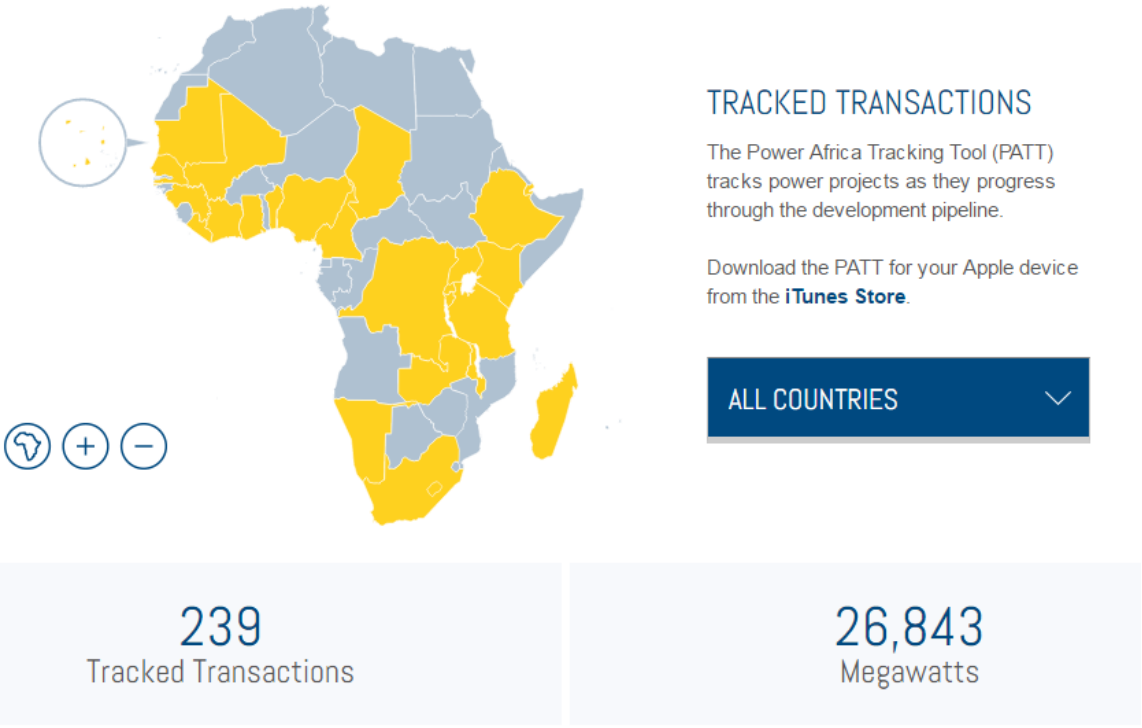


Figure 3-6: PATT map on the Power Africa website



3.1.5 PARTNERSHIPS

By the end of FY 2016, Power Africa had grown its partnerships to include more than 130 businesses and organizations across the public and private sectors.

PATRP supports Power Africa partnerships in multiple ways, including the continued secondment of a transaction advisor (TA) within Power Africa partner, NEPAD, to collaborate and accelerate the development of energy projects throughout the continent and maintain Power Africa alignment with NEPAD's Africa Power Vision (APV). Over the course of the year, PATRP's embedded advisor supported advancements of the Ghana 1000 gas-to-power project (a NEPAD priority under APV) by advocating for the ratification of the project's Put-Call Option Agreement (PCOA) by Ghana's Parliament, as well as for the important Kenya-Tanzania-Zambia (KTZ) Interconnector, including coordination with the Office for the Promotion of Private Power Investment (OPPPI) in the quest to ensure that the Tanzania-Kenya section will attract financing by 2017. The TA also provided technical and strategic advice to NEPAD on the Sambangalou Dam Project and the NEPAD Renewable Energy Initiative, which is an energy marketplace for governments to showcase their renewable energy (RE) projects. The response to the Initiative has been encouraging with interest shown by 15 African governments who are ready to use the NEPAD platform to market their projects.

> *OPPPI would like to thank NEPAD and Power Africa for the support that you have rendered to the ZTK Power Project."*
>
> - Clement Chiwele
> Chief Engineer
> Office for Promoting Private Power Investment (OPPPI)

At the end of FY 2016, PATRP deployed a transaction advisor to Abidjan, to be embedded within the African Development Bank (AfDB), a Power Africa partner. The advisor at AfDB serves as a key link between the Bank and Power Africa, focused on attracting incremental capital investment into clean, renewable energy investments. This advisor will assist in bringing the broad range of technical and financial services to bear on qualifying power sector transactions that are financed or co-financed by the Bank. It is anticipated that FY 2017 activities will focus on advancing the financial close of pending hydro transactions, and the structuring of the Fund for Energy Inclusion (FEI) for debt and mezzanine lending for off-grid projects and small IPPs.

FY 2016 also saw the initiation of a new partnership between KenGen and Power Africa, and advanced discussions on the formalization of support provided by Power Africa to NELSAP. PATRP's assistance on both activities are outlined under Objectives 2 and 4 below.

Additionally, as noted in Section 3.1.1, PATRP engaged a new Development Partnerships Specialist, seconded to USAID.

PATRP also continued to provide due diligence services on prospective Power Africa partners.

3.2 OBJECTIVE 2: LATE-STAGE TRANSACTION SUPPORT (PROJECTS GREATER THAN 10 MW)

PATRP's chief approach to advancing power transactions is the deployment of technical, regulatory, and financial experts across sub-Saharan Africa. These on-the-ground transaction advisors (TAs) play specialized roles within their focus countries and/or regions. Some advisors act as conduits for connecting private sector investors to power project needs, while others provide policy, legal, and/or technical counsel. For example, some PATRP advisors work within government ministries, others within national electricity utilities, and others within development finance institutions. This broad scope and reach allows PATRP and Power Africa to cover all bases of power generation transactions. Over the course of the past year, PATRP expanded its footprint of transaction advisory assistance into new countries, and augmented existing support in others:

- Ethiopia – PATRP's resident transaction advisory team in Ethiopia now includes a second transaction advisor, a local legal advisor and a project finance advisor. PATRP also established a dedicated Power Africa office in Addis Ababa, which is supported by a local assistant.
- Kenya – The PATRP team in Kenya was bolstered in 2016 by a KenGen Utility Advisor and a part-time community engagement advisor.
- Nigeria – PATRP increased its level of support in Nigeria in FY 2016 through the engagement of a lead transaction advisor, a resident gas sector advisor, and a resident legal advisor.
- Southern Africa – PATRP engaged a second Regional Transaction Advisor for Southern Africa, and deployed resident TAs in Angola and Malawi at the end of FY 2016, and expects to engage a resident TA in Zambia early in FY 2017. As mentioned above, PATRP also has a TA embedded within the Africa Union's New Partnership for Africa's Development (NEPAD), who is tasked with accelerating the development and implementation of the Africa Power Vision energy projects.
- Rwanda – PATRP deployed a new resident transaction advisor to Kigali.

Figure 3-7 provides a breakdown of the locations of these advisors, some of whom are resident and others deployed for short-term technical assistance.

Figure 3-7: Locations of PATRP Large-Scale Transaction Advisors

To be eligible for Power Africa assistance, a transaction must, in the first instance, be a "qualified" transaction.[7] In addition, it must satisfy the requirements set forth in the Qualified Transactions Assistance Tool (QTAT), which represents a detailed checklist for identifying high-priority, transformative, replicable transactions with broad-ranging local and regional impacts, for Power Africa assistance. A good qualified transaction candidate for assistance is also one that is at a stage where it has made enough achievements to inspire confidence (or soon can) that it will reach financial close and, ultimately, result in incremental MW, increased financial assistance, additional access points/connections, and/or increased efficiency/reliability.

3.2.1 FINANCIAL CLOSURE OF NEW GENERATION PROJECTS ABOVE 10 MW CAPACITY

Financial close refers to when developers/sponsors on a transaction have concluded with lenders a complete package of permanent financing on a non-recourse, limited recourse, or balance sheet basis, and any condition precedent to the initial drawdown of funds has either been satisfied by the developers/sponsors or waived by the banks, and the developers/sponsors are in a position to draw down on the financing being made available. To date, PATRP has helped bring **1,572.5 MW** of power generation projects to financial close, which represents approximately 35% of the 4,543 MW target set for the contract period from inception through FY 2017.[8] Table 3-1, below, shows the transactions closed by PATRP in FY 2016. These transactions represent an addition of **905 MW**. This fell short of PATRP's original FY 2016 target of 1,572 MW, with a number of late-stage transactions in Nigeria, Ghana, Ethiopia, Senegal, and Kenya not progressing to financial close as expected due to some of the following considerations:

- In Ethiopia, newly enacted local legislation impacted previously negotiated deal terms, and delayed the advancement of the first IPP in the country.
- In Nigeria, transaction negotiations were delayed due to the resignation of commissioners at the Energy Regulator in the first quarter of FY 2016, and a lengthy replacement process; and renegotiations of the Put/Call Options Agreement (PCOA) clauses with participation from Ministry of Finance.
- In Ghana, peak power system load was below supply (2,200 MW) with a number of public sector power projects totaling nearly 1,000 MW under construction. This removed the urgency for new IPPs to be provided the required government consents and approvals.
- In Kenya, a similar situation emerged as it experienced a large surplus capacity of 755 MW (48%), given the installed capacity of 2,341 MW and registered maximum peak demand of 1,586 MW. This led to a reluctance by the government to issue letters of support that would support financial close.
- In Tanzania, liquidity problems with the sole off-taker (TANESCO) persist, and continue to impede IPP projects from progressing to financial close.

[7] All power projects in sub-Saharan Africa (excluding coal-fired power plants or coal gasification power sector investments, as well as nuclear power sector investments) that have a reasonable likelihood of being completed in the future are qualified transactions, and eligible for Power Africa support.

[8] The numbers set forth in this Section 3.2.1 are extracted from approved PATRP's approved PMPs and Work Plans (see Section 8 for further details).

- In Senegal, a need to secure additional guarantees to secure payment by the off-taker led to a delay in financial close.

PATRP continues to work to remove these barriers, and is optimistic that many of those late-stage projects that were originally planned to reach financial close in FY 2016, will actually close in FY 2017.

Table 3-1: Transactions Closed by PATRP in FY 2016

Transaction Name	Country	MW
Azura-Edo	Nigeria	450
Senergy 1	Senegal	29
Kinyerezi I Expansion	Tanzania	186
Kinyerezi II	Tanzania	240
TOTAL		**905**

PATRP's role in supporting these four transactions reach financial close is outlined below.

AZURA-EDO (450 MW)

PATRP's engagement on this transaction has been extensive. Initially, through its support to NBET, PATRP assisted with the PPA negotiations, and also with the development of the Put/Call Option Agreement (PCOA), which was adopted in lieu of a government guarantee to provide assurance to the lenders and investors that there will be a way to recover their investment in the event of an early termination of the PPA. In FY 2015, PATRP worked with the U.S. Government to facilitate President Buhari's decision to waive compliance with a Presidential circular for the project. Certain provisions of the circular were blocking the final acceptance of the financial securitization by the lenders. These efforts finally reached conclusion in FY 2016, as PATRP helped with the final steps needed for the transaction to reach financial close. Specifically, PATRP transaction advisors reviewed a draft second amendment to the power purchase agreement (PPA) that Azura's legal counsel sent to Nigeria Bulk Electricity Trading (NBET) for comments and questions. The amendment was limited to resetting the deadlines, which were affected by the delay in closing and were subsequently approved by the parties and the regulator, the Nigerian Electricity Regulatory Commission (NERC). Ultimately, all conditions precedent were met and the transaction reached financial close on December 28, 2015.

SENERGY I (29 MW)

PATRP advanced the 29 MW Senergy I transaction to financial close in Q2 of FY 2016 through a range of support to project stakeholders. This support included evaluation of and advice to the local project partner on the project financial models and the PPA to ensure bankability. In the process, PATRP detected some critical flaws (specifically the overestimation of future earnings) and suggested several modifications. Following further discussions with the local project partner, PATRP discovered that the project was 29 MW, not 20 MW as referenced in the PPA. PATRP recommended that the PPA be adjusted accordingly to allow the project to advance to financial closure.

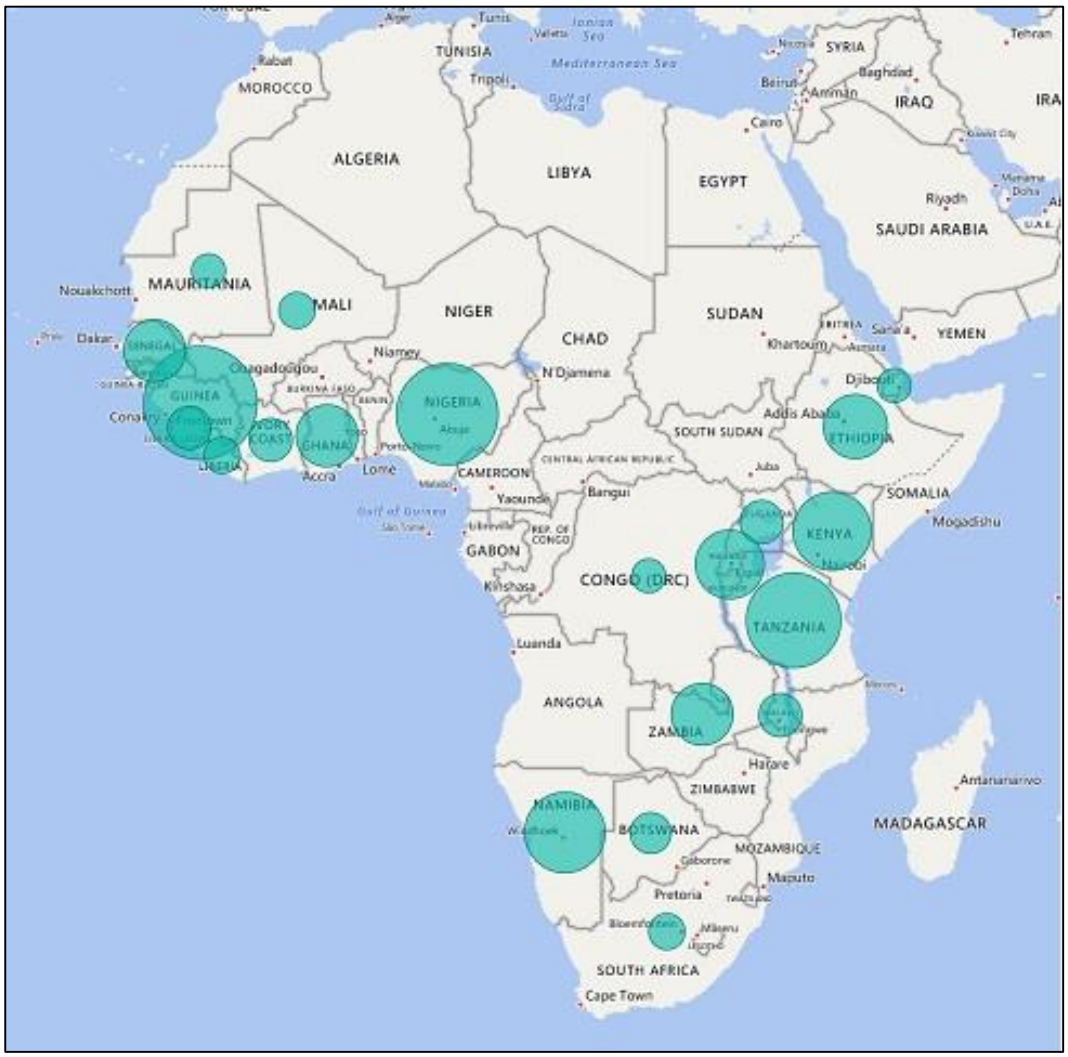
KINYEREZI I EXPANSION (186 MW) & KINYEREZI II (240 MW)

PATRP advanced the 186 MW Kinyerezi I Expansion transaction to financial close in Q2 of FY 2016 by engaging the private sector to provide debt financing (although subsequently the Government of Tanzania provided sole equity financing) and performing a detailed technical review of the project feasibility study. Thereafter, PATRP prepared a Recommendation Memo for the TANESCO Board of Directors to approve the project. Similarly, in relation to the 240 MW Kinyerezi II transaction, PATRP performed a detailed technical review of the project feasibility study and drafted the Recommendation Memo for the Board of Directors to approve the project.

3.2.2 ADVANCING TRANSCATIONS THROUGH THE PROJECT CYCLE

PATRP also provided assistance to a number of other transactions that resulted in movement of deals through the project cycle. Figure 3-8 presents a geographic representation of these transactions, and descriptions of some of the more noteworthy successes are provided below.[9]

Figure 3-8: Active or Proposed PATRP Transactions



[9] Excludes transactions considered to be "on hold."

ADVANCING FRONT-RUNNER SOLAR IPPS IN NIGERIA (MORE THAN 1,000 MW)

PATRP supported the Nigerian Bulk Electricity Trading Company (NBET) to advance 14 front-runner solar IPP projects that had been stalled for many months. This historic achievement could potentially contribute more than 1 GW of utility-scale solar power to the national grid, representing an estimated capital investment of USD$1.5 billion. The proposed solar projects are located in economically disadvantaged areas with the highest need for electrical power generation, such as the north of the country and some areas in the center and south. This will ensure an efficient allocation of available generation resources to the areas with highest need of new generation capacity. Among the reasons for the previous delay was an inability to determine an acceptable tariff on the solar power contracts. In response, PATRP produced a tariff study outlining pricing benchmarks for solar generation in Nigeria, to aid deliberations within the Ministry of Power and NBET. In parallel, PATRP worked with NBET to finalize the standard form solar PPA, incorporating detailed comments from several donor agencies and developers.

In order to secure approval for signing the PPAs with the front-runner solar projects, PATRP prepared a briefing paper for NBET's meeting with the Ministry of Power and the Vice President's Office with recommendations on a suggested policy for competitive procurement and a way forward on the pending directly negotiated solar PV projects. In turn, PATRP was able to brief and advise the Vice President on the merits of solar power project development in Nigeria, and the Vice President ultimately approved PATRP's recommendations and NBET proceeded with finalizing the PPAs, which were signed in July at a ceremony in Abuja.

Figure 3-9: Solar PPA Signing Ceremony in Abuja (photo: Ventures Africa)

Following this milestone success, PATRP began support to NBET on negotiations for the PCOA, which must be submitted to the Federal Ministry of Finance (MoF)/Federal Ministry of Justice for approval. This is a critical step toward achieving financial close.

To support this effort, and at the request of NBET, PATRP helped organize a high-level, two-day training on the PPA and PCOA. This was the first workshop of its kind organized for the senior leadership of key stakeholders in the power sector of the country, such as the Ministry of Finance; Ministry of Justice; Ministry of Power, Works and Housing; the Bureau for Public Procurement; the Nigerian Electricity Regulatory Commission; and NBET. The training was organized in coordination with NBET's legal counsel and helped broker discussion and dialogue on outstanding provisions in the PCOA. One major risk factor that could slow or impact successful financial closure is the lack of capacity at the Transmission Company of Nigeria (TCN). TCN must approve key project activities and enter into grid connection and transmission agreements with each IPP. In FY 2017, PATRP will engage with senior management at NBET and TCN to define a complete list of project requirements, and work with the two to facilitate closer cooperation and accountability regarding the solar projects.

I wish to put on record our profound thanks and appreciation to Power Africa for the unflinching support to the evolution and development of Nigeria's fledgling electricity market. I also want place on record the great work that your transaction advisor has done singularly in support of NBET's Solar PCOA negotiations."

- Waziri Bintube
Chief Financial Officer
Nigerian Bulk Electricity Trading Plc (NBET)

ADVANCING THE QIPP PROJECT IN NIGERIA (540 MW)

The Qua Iboe Power Project (QIPP) is a proposed USD$1.2 billion, 540 MW combined cycle gas-fired power plant, developed by a joint venture between Mobil Producing Nigeria (MPN) and the Nigerian National Petroleum Corporation (NNPC). Through PATRP's assistance in FY 2015 and FY 2016 to NBET, MPN and NNPC were able to negotiate the bulk of the key commercial project agreements, including the PPA, PCOA, Ancillary Services Agreement, and Grid Connection Agreement. A new joint venture is in the advanced stages of purchasing the rights to finance, construct, and operate the proposed power plant.

However, evacuation of power from the plant to the grid remains an issue. The developer has promised to build a 58 km, 330 kV double-circuit transmission line from the power plant to the Ikot-Abasi substation, which the Transmission Company of Nigeria (TCN) will operate once the line has been constructed. In order to evacuate the project's power to the national grid, another 78 km, 330 kV double-circuit transmission line from Ikot-Abasi to Ikot Ekpense will be required, otherwise the power will be stranded. The National Integrated Power Project (NIPP) has committed to finance and construct this transmission line, which TCN will own and operate. NDPHC (the corporation that owns

the NIPPs) has had significant difficulty executing the construction of the primary 78 km line. The contract with the EPC contractor hired to undertake the work was terminated at the request of the EPC. Through the EPC's pre-construction due diligence, some key under-specification flaws were discovered and work was halted until this issue was resolved. Given the change in the project scope, a no-objection was required from the Bureau of Public Enterprises. PATRP has been working closely with NDPHC to expedite this process. The EPC contract is presently being renegotiated with the contractor. PATRP has recommended to the NDPHC Managing Director that they establish an ad hoc steering committee (NDPHC & TCN) with the support of PATRP to monitor/guide progress on this issue. In this respect, PATRP managed to get the requisite approval letters from the VP's office and NBET (to TCN) unstuck. Our focus now is on pushing for the establishment of the steering committee so that we can: (i) define clear plan/path for expediting the construction of the 78km line, and (ii) ensure regular tracking and reporting on this progress.

EARLY POWER/BRIDGE IN GHANA (400 MW)

The 400 MW Early Power Limited (EPL) project is being developed as a fast-track Independent Power Project (IPP) by a group of international private investors lead by General Electric, in the Tema power enclave in eastern Ghana. PATRP assisted the Government of Ghana (GOG) and Early Power on this transaction through direct review and comment on project agreements, as well as enabling environment and capacity-building activities. PATRP met regularly with the Electricity Company of Ghana (ECG) to review transaction status and feedback from regular ongoing negotiations and provided additional analysis to prepare ECG for continued discussions with the Sponsors.

For example, PATRP reviewed proposed changes to transaction documents, including a 20-year PPA, tariff structure, and detailed financial model. PATRP worked with the Ministry of Finance (MOF) and their external consultant/legal counsel, the Ministry of Power (MOP), and the Attorney General (AG) to finalize GOG's modified GCSA for use by IPPs (the GCSA language will be amended to include the PCOA structure). As discussions on the GCSA/PCOA continued, PATRP met with the Early Power sponsors to discuss their request for advocacy and to review support provided to the transaction over the past two years. Based on discussions with the GOG, the sponsors were willing to amend their GCSA to include a provision indicating their willingness to migrate to a new government support structure under development by MOF and their external consultants and lawyers. PATRP worked with MOP/MOF to facilitate completion of a modified GCSA that provided equal or better protection to equity investors and debt holders than the original version of the GCSA. Eventually, the GOG and the sponsors agreed on a PCOA that was originally negotiated with PATRP's support in Nigeria. This PCOA was signed by the GOG on September 14, 2016, along with the revised PPA.

PATRP also assisted Early Power in securing a DCA Loan guarantee of USD$100 million (for Phase 1 of the project) and is initiating due diligence in this regard.

ETHIOPIA'S FIRST SOLAR PROCUREMENT (100 MW)

In support of EEPCo's push to prioritize IPPs as part of an 18,000 MW new generation initiative, PATRP provided technical assistance on EEPCo's first IPP procurement of the 100 MW Metahara solar PV project. PATRP assisted EEPCo with evaluation of RFQ submissions and the subsequent RFP process, as well as the related PPA. PATRP also supported MoWIE, EEA, and EEPCo technical experts on

amending Energy Proclamation 2013/810 to provide a legal framework for Solar, Wind, Hydro and Biomass IPPs. In parallel, PATRP supported the development of a Connection Agreement and Implementation Agreement, each aligned with the terms of the RFP. Bids are expected in early FY 2017 and PATRP will support the contracting process with the selected developer in an effort to push for financial close in the next 12 months. PATRP will also support the development of an environmental and social impact assessment in line with international best practices, which will help expedite the permitting process.

MALAWI'S FIRST PPA NEGOTIATIONS FOR SOLAR PV AND HPP PROJECTS (30 MW)

During the first quarter of FY 2016, PATRP identified an opportunity to work with ESCOM (the state power utility) and Power Africa partner JCM Capital on what would become the very first independent power producer (IPP) power purchase agreement (PPA) for a solar transaction in Malawi. Following passage of an amendment to the Electricity Bill of 2016 in June, which allows IPPs to have equal access to Malawi's transmission network and electricity market, PATRP's embedded Transaction Advisor at ESCOM coordinated legal and transaction advisory support for the PPA negotiations. In August, negotiations concluded with an initialed PPA for the 30 MW JCM Salima/Matswani Solar project. As part of the process, and in order to facilitate future PPAs, PATRP drafted a standardized PPA for new unsolicited solar and dispatchable power projects, and built internal capacity at ESCOM to empower the utility to handle PPA negotiations with confidence. PATRP will continue to work with the Government of Malawi and development finance institutions to create the financial and regulatory environment for future renewable IPP PPAs.

Just a quick note to say thanks for everything. Having a solar PPA being the first IPP PPA to be initialed in a country is a huge achievement. This would not have been achievable without your leadership, experience, intelligence, and pragmatism."

- Tom Heintzman
Chief Operating Officer
JCM Capital

TAIBA N'DIAYE WIND IN SENEGAL (158 MW)

The Taiba N'Diaye project entered its ninth year of project development in 2016. After receiving proposals from OPIC for funding (USD$250 million senior debt) and PRI (USD$70 million), negotiations entered their final stages in July, during which Senelec management signaled their desire to reduce the size of the project from 158 MW to 50 MW, which would have seriously undermined the viability of the project. After discussions with the project developer (Lekela), PATRP elevated the matter to the

U.S. Government for further resolution with the Minister of Energy. Ultimately, Senelec withdrew its request three days later and the PPA was executed in September. Three important challenges remain: Senelec's inability to issue a short-term guarantee sufficient to meet the requirements of OPIC, acceptance by the Government and the Central Bank on the use of offshore accounts, and the confirmation of land rights required for the assembly and maintenance of wind turbines. PATRP began to address these barriers at the end of FY 2016, and this effort will continue into FY 2017.

KIPETO WIND PROJECT IN KENYA (100 MW)

PATRP worked with local stakeholders to expedite the negotiation and signing of the PPA in June 2016. The signing paved the way for an application for the Government Letter of Support (GLOS), which PATRP worked tirelessly to procure throughout the final months of FY 2016, and which will hopefully be delivered in Q1 FY 2017.

3.2.3 DEVELOPING A PIPELINE OF GENERATION TRANSACTIONS

Building a healthy pipeline of new transactions has also been a focus, to include identifying opportunities for increased efficiency and greater MW output from existing generation units (as was done with the VRA thermal plants in Ghana). In FY 2016, PATRP added 105 new active transactions to its portfolio, totaling approximately 12,386 MW of potential new generation capacity. An additional 5,000 MW of new proposed transactions were also identified by PATRP advisors, but remain subject to additional vetting and consideration of PATRP/Power Africa support. Together, these numbers compare favorably to the ambitious target of 19,788 MW of new projects to be added to the pipeline in FY 2016.

Building on the PATRP transactions that were identified or inherited into its portfolio in FY 2015, by September 30, 2016, PATRP had a total pipeline of over 165 active Power Africa transactions with 22,031 MW of potential generation capacity. This pipeline includes projects in various stages of development (see Figure 3-10, below).

With the deployment of new transaction advisors in the past 12 months, a number of additional projects were identified. For instance:

TANZANIA – LARGE-SCALE IPP

There were eleven new generation projects (>2,300 MW) identified by PATRP's Transaction Advisor who deployed to Tanzania at the beginning of FY 2016, which are in various stages of preparation, negotiation or construction, including eight IPPs. This total is up from just two TANESCO-owed projects in September 2015.

CÔTE D'IVOIRE

PATRP deployed a second Transaction Advisor to the West Africa region in FY 2016. Based in Abidjan, Côte d'Ivoire, the TA quickly sought engagement on new projects and worked with public and private sector stakeholders, including the Ministry of Energy, DFIs, and local and foreign IPP sponsors, on ways Power Africa can support electricity development in the country. For instance, the TA actively worked

with the local developer to advance the Tiassalé 25 MW run-of-river hydro project by providing guidance on raising funding and attracting strategic partners.

ANGOLA

Looking to FY 2017, PATRP anticipates additional transactions being identified in Angola with the deployment of a new Transaction Advisor.

PATRP estimates that more than 2,400 MW of its project pipeline will reach financial close by September 30, 2017 (see Table 3-2 for an indicative list of transactions that are projected to close in FY 2017).

Figure 3-10: Active, Financially Closed and Online PATRP Transactions by Stage (as reflected in PATT)

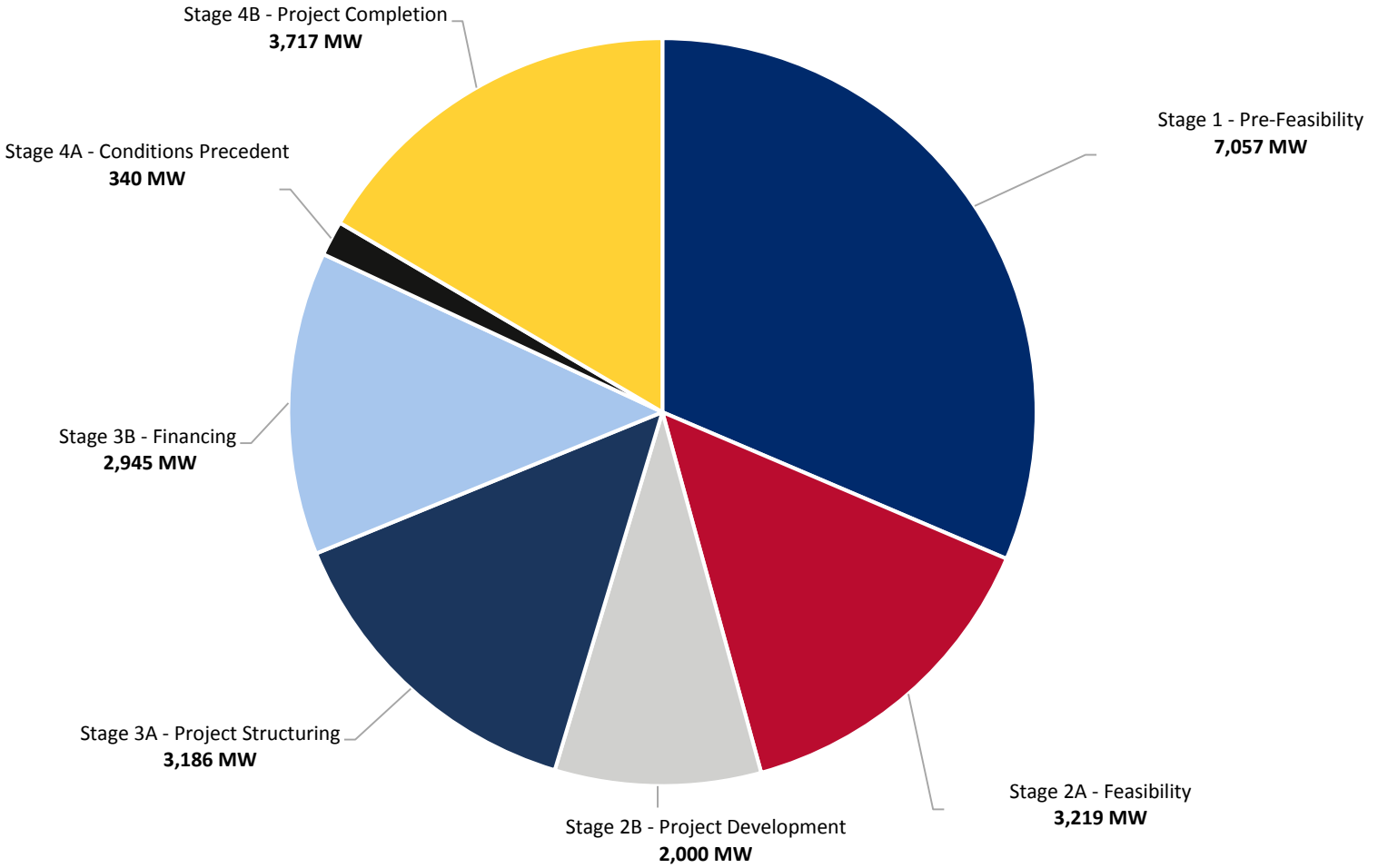


Table 3-2: PATRP Active Transactions Forecasted to Reach Financial Close by September 30, 2017

Country	Transaction Name	MW
Ethiopia	Corbetti Geothermal Phase 1	20
Ethiopia	Metahara Solar Project	100
Ghana	Ghana Bridge Project Phase 1b	50
Ghana	Ghana Bridge Project Phase 1a	144
Kenya	Various solar IPPs	40
Kenya	Kipeto	100
Kenya	Various geothermal – KenGen	40
Malawi	Various solar IPPs	80
Nigeria	Various other gas IPPs	1,000
Nigeria	Various solar IPPs	500
Nigeria	Qua Iboe (QIPP)	540
Rwanda	HFO/LFO Rental Thermal Project	30
Senegal	Taiba N'Diaye Wind Farm	158
Uganda	Achwa II HPP	42
Zambia	Scaling Solar Zambia 1 - Ngonye	28
Zambia	Scaling Solar Zambia 2 - Bangweulu	47.5
	TOTAL	**2,919.5**

3.2.4 CLEAN ENERGY DEVELOPMENT

Power Africa's emphasis on generating new electricity capacity from renewable energy sources drives PATRP's efforts across the continent. In FY 2016, Tulila HPP was commissioned, which resulted in 10,661 tCO_{2e} of emissions avoided annually. Further, the four transactions that reached financial close in FY 2016 will, once commissioned, help avoid an estimated 30,572 tCO_{2e} (Senergy), 659,512 tCO_{2e} (Azura), 521,008 tCO_{2e} (Kinyerezi II) and 403,781 tCO_{2e} (Kinyerezi I Expansion) of emissions annually. Clean energy projects expected to reach commercial operations in FY 2017 under PATRP include: the Cummins Baringo biomass project in Kenya (8.4 MW), Kinyerezi I Expansion in Tanzania (186 MW) and the Kpone Cenpower project in Ghana (350 MW). These projects will help avoid an estimated 4,884,773 tCO_{2e} of emissions annually.

It also worth noting that more than 60% (approximately 13,000 MW) of PATRP's transaction pipeline is drawn from renewable energy sources. These projects would result in more than 17 million tons of CO_2 equivalent (tCO_{2e}) avoided annually. Table 3-3 shows this pipeline by technology.

Table 3-3: PATRP Renewable Energy Pipeline by Technology

Pipeline/Technology	MW	Projected reduction in tCO_{2e} /annum
Wind	1,046.8	1,025,092.22
Solar	2,323	1,266,767.10
Geothermal	1,535	497,932.20
Biomass	93	86,668.69
Hydro	7,895.72	14,569,680.71
Total	**12,893.52**	**17,446,140.92**

3.2.5 PARTNERSHIP WITH KENGEN

In March 2016, Power Africa and KenGen concluded a Cooperation Framework, which established a strategic partnership that will work towards advancing Kenya's energy goals. Based on the Cooperation Framework, Power Africa will help improve KenGen's operational efficiency. Consistent with the terms of the Cooperation Framework, PATRP deployed a Senior Geothermal Utility Advisor in FY 2016 to focus on completing KenGen's immediate pipeline of projects, namely competitive tenders for three new Olkaria projects totaling 350 MW, as well as the rehabilitation of Olkaria I. In addition, the Advisor worked with KenGen on planning and developing a new binary electric generating project to be located near existing Olkaria generating plants in order to better utilize the existing well production. Between existing and new projects, PATRP anticipates supporting KenGen with developing generation capacity of 1,300 MW, of which 140 MW may reach financial close in FY 2017, and improving operational efficiency.

3.3 OBJECTIVE 3: SMALL-SCALE PROJECTS AND RURAL ELECTRIFICATION/MINI-GRIDS SUPPORT

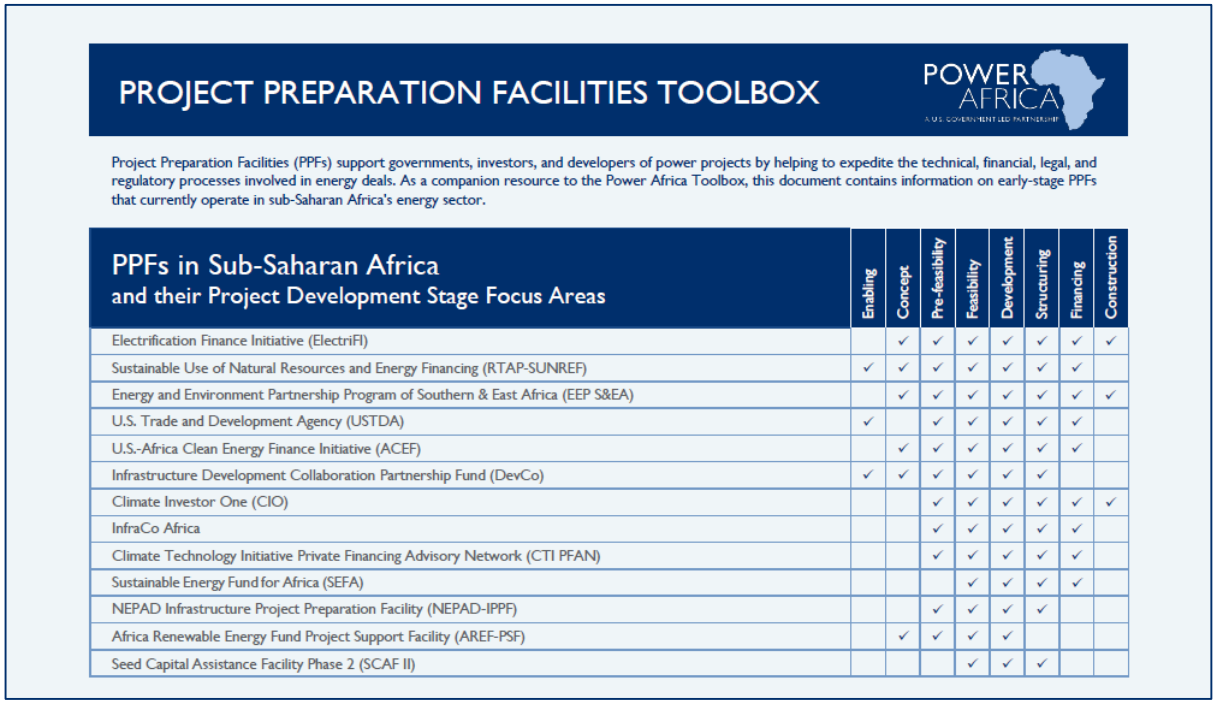
This work stream is led by the Pretoria-based SSRE advisor, who also backstops the work being done by field-based transaction advisors. A new SSRE advisor joined the team in January 2016, and deployed to the PATRP Pretoria office shortly thereafter. PATRP also selected and hired BTG advisors for Kenya, Nigeria, Uganda, Rwanda, and East and West Africa Regions during FY 2016, and scopes of work and work plans for the BTG team were developed (for a total of 10 advisors working in 11 countries). The team also developed management protocols, training, and onboarding procedures.

3.3.1 PROJECT PREPARATION FACILITIES REPORT AND TOOLBOX

In late FY 2015, the Power Africa Coordinator's Office asked PATRP to research and report on the project preparation facilities (PPFs) that are relevant to early-stage project development in the energy sector. PPFs enable governments, investors, and developers accelerate the technical, financial, legal, and policy processes that can often delay power projects. PATRP completed the research and submitted a comprehensive report in FY 2016 on PPFs working in the African energy sector. The report presents a set of recommendations on how and where Power Africa could best focus any future support to PPFs.

From the report, PATRP developed a Project Preparation Facilities (PPF) Toolbox (see Figure 3-11) with information on early-stage PPFs that currently operate in sub-Saharan Africa's energy sector. The PPF Toolbox evaluates thirteen PPFs and their objectives, geography, funding sources, eligibility criteria, application processes, and other relevant details. This new addition augments the Power Africa Toolbox, and will be used by the entire Power Africa team, including TAs and Power Africa partners, for insight into the power project funding landscape.

Figure 3-11: PPF Toolbox



PROJECT PREPARATION FACILITIES TOOLBOX

POWER AFRICA

Project Preparation Facilities (PPFs) support governments, investors, and developers of power projects by helping to expedite the technical, financial, legal, and regulatory processes involved in energy deals. As a companion resource to the Power Africa Toolbox, this document contains information on early-stage PPFs that currently operate in sub-Saharan Africa's energy sector.

PPFs in Sub-Saharan Africa and their Project Development Stage Focus Areas	Enabling	Concept	Pre-feasibility	Feasibility	Development	Structuring	Financing	Construction
Electrification Finance Initiative (ElectriFI)		✓	✓	✓	✓	✓	✓	✓
Sustainable Use of Natural Resources and Energy Financing (RTAP-SUNREF)	✓	✓	✓	✓	✓	✓	✓	
Energy and Environment Partnership Program of Southern & East Africa (EEP S&EA)		✓	✓	✓	✓	✓	✓	✓
U.S. Trade and Development Agency (USTDA)	✓		✓	✓	✓	✓	✓	
U.S.-Africa Clean Energy Finance Initiative (ACEF)		✓	✓	✓	✓	✓	✓	
Infrastructure Development Collaboration Partnership Fund (DevCo)	✓	✓	✓	✓	✓	✓		
Climate Investor One (CIO)			✓	✓	✓	✓	✓	✓
InfraCo Africa			✓	✓	✓	✓	✓	
Climate Technology Initiative Private Financing Advisory Network (CTI PFAN)			✓	✓	✓	✓	✓	
Sustainable Energy Fund for Africa (SEFA)				✓	✓	✓	✓	
NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF)			✓	✓	✓	✓		
Africa Renewable Energy Fund Project Support Facility (AREF-PSF)		✓	✓	✓	✓			
Seed Capital Assistance Facility Phase 2 (SCAF II)				✓	✓	✓		

3.3.2 ETHIOPIA

In Ethiopia, PATRP discussed with a small-scale wind developer their planned projects in the country, which include 0.5 kW wind-based home systems that will provide access to electricity for some 10,000 households. In addition, PATRP reviewed and provided comments to USAID/Ethiopia's scope of work (SOW) for mini-grids and rural electrification efforts. The SOW focused on conducting feasibility studies for a large number of villages to determine: (i) best technology and financial options for mini-grids in 150 villages; (ii) best technology and financial models for hybrid solutions in 29 villages with mini-grids already operating with diesel engines; and, (iii) solar irrigation sites.

PATRP also provided support to USAID/Ethiopia in determining preliminary Levelized Cost of Electricity (LCOE) of rooftop solar. Ethiopia's rooftop solar program targets affordable housing and low-income communities in peri-urban areas of Addis Ababa, targeting 70,000 buildings with an expected population of 250,000 people. PATRP developed an analysis comparing the rooftop solar program and utility scale projects of the same magnitude. Using PVSyst software, PATRP ran the LCOE under four scenarios – one run was conducted for the rooftop system, while three additional runs were conducted to analyze the LCOE of larger utility-scale projects.

Table 3-4 below shows an initial analysis of the four scenarios, where the inputs included costs from early- to medium-developed markets range between USD$1.44/Wp to USD$1.62/Wp installed. The team also assumed low interest rates (6%) and long loan terms (10 years), which are crucial for successful start-up of rooftop markets. This financial terms in other early stage rooftop markets are usually met by development banks. The results for LCOE for rooftop system ranged between USD$0.11/KWh and USD$0.12/KWh for the rooftop typologies, and an additional run for utility-scale solar was made as comparison, resulting in USD$0.07kWh.

As can be observed, the LCOE remained constant across scenarios, as the cost per watt installed at utility scale is not reduced significantly to have an effect on the LCOE. With regards to the rooftop solar alternative, even with the large number of roofs that could yield the equivalent of utility-scale solar, the price of rooftop solar will remain high (not lower than USD$0.11) since roof installations are not as standardized as utility-scale projects and require higher input costs per watt installed.

Table 3-4: Ethiopia Rooftop Solar LCOE Analysis under Four Scenarios

ROOF AREAS	TYPOLOGY E1	TYPOLOGY E2	TYPOLOGY A2	UTILITY SCALE 300 MW	UTILITY SCALE 500 MW	UTILITY SCALE 1,000 MW
AREA (M^2)	380.1	290.4	390.4	1,651,535	1,887,395	3,145,658
			RESULTS FROM PVSYST			
PV ARRAY (kWp DC)	56.0	42.0	57.5	300 MWp	500 MWp	1000 MWp
PRODUCED ENERGY (MWh/YEAR)	99.1	74.8	102.1	537,067	896,006	1,792,001
LCOE $/kWh	**0.12**	**0.12**	**0.11**	**0.07**	**0.07**	**0.07**
$/WP	**1.55**	**1.62**	**1.44**	**0.95**	**0.92**	**0.90**

While the analysis showed that utility-scale projects have lower LCOE compared to the rooftop solar program, which was expected, other factors such as land and resettlement issues, as well as impact from capacity-building efforts with local private developers, play a significant role in supporting the rooftop solar program efforts. However, the team also identified that the GoE would require significant training and capacity-building efforts to implement the rooftop solar program, including resources outside the scope of the BTG support. USAID was responsible for finalizing an official memo to the GoE highlighting the benefits and challenges of the rooftop solar program.

3.3.3 GHANA

PATRP conducted a successful visit to the pilot mini-grid system in operation at Pediatorkope, an island community in the Volta region, to benchmark public-led mini-grid investment. As part of this visit, PATRP also assessed lakeside and inland villages identified by MOP/RAED/PATRP for piloting and implementation of a scalable mini-grid system. In all, PATRP met with six companies, a university, MOP, GEDAP, District Administration, and community leaders of six rural and remote communities in the Afram Plains South. Following on from this, PATRP developed several recommendations to help implement the mini-grid policy established by MOP, including the development of pilot mini-grid projects. However, during this period the team identified very little inclusion of private sector business models in these projects; private sector is included only as EPC contractors. Moreover, there was very little knowledge and interaction with pico-solar and SHS companies in Ghana. This led the BTG team to develop a new work plan that focuses on bringing off-grid private sector models to rural areas and help implement the micro-grid policy while maximizing private sector participation as energy services companies. The new work plan will be initiated in Q1 FY 2017.

3.3.4 KENYA

PATRP's new resident *Beyond the Grid* (BTG) Advisor for Kenya conducted a scoping trip in mid-FY 2016, and identified challenges and/or needs to advance the BTG sector in Kenya. These challenges mirror those throughout sub-Saharan Africa, and include regulatory (policy, tariff, import duties, etc.), technical (capacity building), and financial (credit and financing) issues. Efforts to resolve these issues will form the bulk of the BTG Work Plan for Kenya moving forward.

During this period, PATRP conducted the following activities:

POLICY AND REGULATORY SUPPORT

PATRP began developing legal and regulatory solutions to address eventual integration of off-grid systems into the grid. In this direction, PATRP met with ERC and Kenya Power in FY 2016 to socialize the terms of reference for this work stream. Feedback was provided and subsequently integrated into the terms of reference. PATRP drafted interconnection terms for MoEP to review and integrate into the existing ERC distribution licensing process to unlock regulatory barriers that mini-grid developers face in Kenya. This activity is expected to provide support to the sector while the Mini-grid Framework Study the World Bank is supporting is implemented. The overall goal of this facility is to de-risk the mini-grid transactions that have not reached financial close due to the lack of an interconnection framework.

PATRP also conducted an off-grid analysis showing attributable connections to Power Africa private sector partners in the last five years, and the impact of import duties and VAT exemptions in their sales. In the last five years, PA private sector partners' efforts account for 700,000 off-grid connections, but it is expected that the rate of connections might decrease substantially if policy measures against high import duties and VAT are not implemented.

Finally, PATRP provided significant input to the Kenya National Electrification Strategy (KNES). The GoK plans to provide consumer-facing subsidies, which will create a distortion of the SHS market in Kenya. PATRP has presented the government with other solutions that can support low-income communities while not distorting the market, including voucher systems and results-based finance grants that have proven successful in other countries.

TECHNICAL ASSISTANCE TO OFF-GRID COMPANIES

The portfolio of developers of small-scale renewables, mini-grids, and solar home companies approaching Power Africa has grown, and the team met with more than 25 companies in the final months of the reporting period. The team provided matchmaking with BTG and SSRE funding opportunities in the Kenyan market, including supporting companies with proposal submissions in response to the USTDA open call for Power Africa Projects. Specific support to 18 international and local companies included:

- Access to finance (grants and commercial lending), technical assistance to improve ability to scale with off-the-shelf sales models and PAYG platforms, off-grid sector market intelligence and geographical priorities, EAC custom tax regulations, fees structuring and solar securitization.

- Support to mini-grid developers entering the Kenyan market who found barriers during the registration process when local content regulations were applied and withdrawn, not allowing new companies to finish the registration process. PATRP researched and advised on actions to take on these issues, allowing private sector companies to finalize registration. The BTG team met with new solar home companies entering Kenya who requested support with staff recruitment and an overview of the Kenyan solar home market.
- Due diligence support for an investor enquiring about the Kenyan and East African markets, with the possibility of structuring a USD$50 million IPP in the mini-grid market, to be launched in January 2017. The BTG team also provided due diligence support to a lender in the Kenyan off-grid market that was working on debt deals worth USD$13.5 million with two solar home companies.

ACCESS TO FINANCE SUPPORT

The Kenya BTG team met with DCA and provided recommendations on a current credit guarantee for connections in Kenya to include mini-grid and solar home connections, and not just Kenya Power (KP) connections. In addition, the BTG advisor met with a bank interested in the BTG-DCA credit guarantee instrument, and later began support to the bank by assisting with their off-grid strategy to be eligible for such instrument.

PARTNERSHIPS SUPPORT

The BTG team provided support to the World Bank and DFID in the design of their respective upcoming programs. Specific support included:

- Feedback on World Bank consultancies for the Mini-grid Framework, Kenya National Electrification Strategy, Kenya Geospatial Energy Map, and Kenya Off-Grid Solar Program. These began to operationalize the topline Power Africa-World Bank partnership, with a focus on off-grid. In addition, the World Bank requested Power Africa support on the design of the USD$150 million off-grid fund focused on providing off-grid options to 14 marginalized counties in rural Kenya. This off-grid fund seeks to provide solar home companies (i) debt through local banks, (ii) grants through facility management, and (iii) micro-financing at the county levels.
- Input and assistance to the DFID Energy Africa Compact in Kenya, to be signed in November 2016. The Compact seeks to accelerate the expansion of the household solar market in Africa and help achieve universal energy access by 2030. PATRP and DFID met at the International Off-grid Renewable Energy Conference held in Nairobi on September 30 to discuss the DFID Energy Africa Kenya Compact, including funding mechanisms of support for solar home companies and regulatory support for the sector.

3.3.5 NIGERIA

PATRP initiated work on the Solar Nigeria Program jointly with DFID/Adam Smith International, which included desktop research on micro-grid activity and coordination with the USAID Global Development Lab (GDL) on identifying opportunities for the GDL to become involved in the Solar Nigeria Program. Building on these efforts, PATRP conducted a 10-day mission to Nigeria in an effort to develop a collaborative work plan with DFID and REEEP-Winrock in the context of the Solar Nigeria Program. The key

findings and observations from the trip were incorporated into the PATRP Nigeria FY 2016 Work Plan, which included support for transactions, facilitating access to finance, and policy-related efforts as the Solar Nigeria Program advances.

In Q2 2016, PATRP held meetings with multiple developers, lenders, BTG partners, and the Vice President's Office, particularly in connection with barriers preventing adoption of small-scale solar in the country. Chief among the issues was difficulty obtaining foreign currency, in part due to the Circular issued by the Central Bank of Nigeria (CBN) preventing foreign currency lending by local commercial banks to entities that do not enjoy foreign currency revenues.[10] In addition, logistical difficulties, the costs of importing solar systems, and lack of finance at viable rates and terms have hindered small-scale solar efforts. PATRP is working to address all of these challenges with appropriate stakeholders.

Finally, based on feedback from a number of local and international off-grid energy companies, PATRP completed a detailed literature review of all information currently available that relates to the off-grid energy sector in Nigeria, under the three main categories of demand, enabling environment, and supply chain. A detailed report was developed to concisely summarize this information, and was circulated to a range of stakeholders, including all local off-grid companies currently active in Nigeria, and several international companies looking to enter Nigeria in the near future, as well as other partner organizations, for their feedback.

PATRP also provided support in the following areas:

TECHNICAL ASSISTANCE TO OFF-GRID COMPANIES

After a comprehensive assessment of over 20 companies currently active in the off-grid energy sector within Nigeria, PATRP shortlisted six of the most promising, in respect of their potential to rapidly scale achieving new household and small business connections and gender equality. PATRP started working closely with three of them to review and strengthen their current business models and financial plans, and will start refining and strengthening their marketing and retail strategies, including developing new partnerships with distribution and retail partners. These companies were added to PATT.

ACCESS TO MOBILE MONEY

PATRP started working closely with the Gates Foundation, the Global Development Laboratory, the Central Bank of Nigeria (CBN), the national banking regulator, and the Nigerian Communications Commission to support off-grid companies in Nigeria to access mobile finance to help their customers to pay for their off-grid energy services, thus overcoming the up-front consumer finance barrier. PATRP presented three models of how to use mobile money for off-grid energy services:

- Model 1: Closed loop payment network
- Model 2: Payment for energy as a value-added service
- Model 3: Energy payment vouchers

[10] See Section 3.4.2 for a detailed summary of PATRP's policy report on the effects of the CBN Circular

CBN approved Model 1 and 3 to be developed further. PATRP began working with several off-grid energy companies in Nigeria, as well as several Mobile Money Operators and Mobile Network Operators, to develop specific pilots for Model 1 and Model 3 that can be scaled up in the future.

ACCESS TO FINANCE SUPPORT

PATRP conducted an assessment of the off-grid finance sector in Nigeria to understand the main barriers off-grid companies experience in their attempts to secure financing required to scale up their operations. Discussions with Ecobank, Fortis Microfinance, and Stanbic Bank identified that the main barrier for Financial Institutions (FIs) is their lack of access to low-interest capital due to the current perceived high risk in Nigeria, resulting in interest rates over 22% per annum, which is well above what off-grid energy companies in Nigeria can take on, due to their relatively low margins in a high currency risk, import-dependent sector. PATRP assessed the financing needs of more than ten off-grid energy companies in Nigeria, and began working with a range of potential investors to try and meet them. The BTG team is investigating grants, debt, and equity options to allow companies to scale up.

3.3.6 RWANDA

PATRP welcomed a new country BTG Advisor at the end of FY 2016 who will support both the government and the private sector in the implementation of the Rural Electrification Strategy (RES). The RES will bolster the off-grid sector through a voucher program for low-income households to purchase solar products, a risk mitigation facility to provide additional access to finance for solar companies, and development of mini-grids by the private sector. PATRP support will initially focus on the voucher program as it will be the first to be implemented. The World Bank will fund the other RES components through SREP, and PATRP discussed with them about providing future support.

PATRP also began to engage solar companies and mini-grid developers to assess how Power Africa can provide support. Engagement with these entities is critical to the success of the RES since all components rely on the private sector for implementation. Discussions commenced with banks to gauge their interest in establishing DCA loan guarantees for the energy sector.

3.3.7 TANZANIA

PATRP's Rural Energy Agency (REA) Transaction Advisor provided technical assistance to REA across a number of transactions and programs initiated by Power Africa partners:

- PATRP provided advisory support in the establishment of the Sida/DFID Off-Grid Program that is implemented through REA. PATRP support will ultimately facilitate the disbursement of approximately USD$50 million over the next four years (2016/17 to year 2020/21) to REA for small-scale renewable energy projects. The off-grid component of the Sida/DFID program is projected to yield 86,000 connections through green mini- and micro-grids and 188,000 connections through solar PV-systems.
- PATRP provided advisory support in the establishment the World Bank-sponsored Tanzania Rural Electrification Expansion Program (TREEP – off-grid component) that is also implemented through REA. PATRP support will ultimately facilitate the disbursement of approximately USD$42 million over the next five years (2016 to year 2022) to REA for small-scale renewable energy projects. The TREEP

off-grid component of the program is projected to bring electricity connections to 310,000 Tanzanians (approximately 60,000 households) through SPPs and other renewables, including solar PV systems. Also, at least 33 MW of new clean energy capacity will constructed under the program.

In terms of the REA transaction portfolio, PATRP undertook the following actions:

- Early in FY 2016, PATRP identified two new hydropower plant (HPP) projects for potential inclusion as Power Africa transactions: Lupali (317 kW) and Ijangala (360 kW). PATRP recommended changes to the indicative term sheet issued by the lender on behalf of the project promoters, and later assisted the promoters in drafting a letter of response to the lender.
- PATRP helped move the 407 kW Isigula Small Hydro Project toward bankability by resubmitting all project documentation, including technical and feasibility studies, environmental impact assessment, and socio-economic analysis of beneficiaries.
- PATRP also helped move the NextGen 5 MW Solar Plant to the construction phase with a loan from a local bank.
- Construction was completed on the PATRP-supported 7.5 MW Tulila Hydro plant. Phase 1 of the facility was fully commissioned in February. This took place after TANESCO upgraded equipment to fully utilize the plant's initial 5 MW from Phase 1. Phase 2 (the additional 2.5 MW) is contingent upon the construction of a 220 kV line by TANESCO, which is funded by the Swedish government.
- PATRP reviewed and commented on the memorandum for the 10 MW Nakatuta small hydro project, which requires investment for expenditures associated with construction, management during construction and financing. The electricity generated will be sold to TANESCO via a PPA (20 years) at a standardized tariff, which will be scalable on an annual basis.
- Parties to the 10 MW Kiwira small hydro project executed the new US dollar-based standardized PPA (PPA) after the regulator, EWURA, approved amendments to the newly published PPA. Through collaborative efforts of PATRP, Kiwira project sponsors and other partners, this became the first PPA signed under the new small power producers (SPP) framework – known as the second generation SPP Framework – established in April 2015. While the project was initially approved for financing, a decision was later made by the lender's parent company to reverse the decision, citing a change of strategy on cross-border transactions on small power projects. Nevertheless, the project is moving forward towards financial close with cooperation from a local bank.

3.3.8 UGANDA

In Uganda, the BTG team worked with a number SSRE developers at various stages of project development. This included an early scoping visit to meet with developers, gather documentation, and visit sites. BTG was principally engaged with four developers:

- two developers each working on one small hydro project;
- one developer working on on-grid and off-grid biomass projects; and,
- a fourth developer working on on-grid and off-grid PV projects.

Support to these developers has differed depending on the stage of their project's development, which ranges from the concept phase to near financial close. Such support has included: technology and risk analysis, drafting inputs to licensing submissions, development of business plans and financial models,

design of investment prospectuses, review and feedback on grant applications, due diligence discussions with potential investors, and introductions to potential equity investors.

Figure 3-12: Photos from PATRP BTG site visits in Uganda

Reviewing gage data for the Kaku River. Read twice daily, these river gages provide the hydrology data critical to a bankable hydropower project.

Following the canal's path. Once completed, the project will divert a portion of the river's flow to a powerhouse nearly 2 km downstream.

Additionally, a meeting was held with a developer about an anticipated 1 MW solar project for the West Nile Rural Electrification Company (WENRECo). The project is in an early stage, and still needs a feasibility study, tariff analysis and financial model. PATRP can begin to support by helping with a terms of reference (TOR) for a feasibility study, and performing HOMER modeling to help size the system (given demand and operating data from the existing plants).

Towards the end of FY 2016, PATRP welcomed a new country BTG Advisor who focused on:

- Performing a BTG Market Study, which included initial meetings with approximately 20 development agencies, development programs, government institutions and coordination bodies (trade associations, sector working groups, etc.) to collect information on current and upcoming activities, perceived role within the sector and market barriers. Efforts are now expected to focus towards private sector meetings and continued literature review. Expected outputs are a market intelligence document aimed at the private sector, and an internal report on areas of opportunity to inform PATRP and/or USAID's areas of focus.
- Direct support to two new mini-grid projects, and shortlisting other companies to be assessed for provision of in-depth technical assistance.

3.3.9 SENEGAL

PATRP's new West Africa BTG Advisor provided support in three main areas: technical assistance, access to finance, and partnerships.

TECHNICAL ASSISTANCE

The West Africa BTG Advisor identified four SHS companies and four mini-grid projects that could potentially receive PATRP support. For example:

- PATRP was approached to help develop a project of 33 mini-grids in Kedougou, develop its strategy and model for SHS, master its capacity for remote-controlled and pre-paid metering, and improve its offer of energy efficient appliances. PATRP initial support linked them with the producers listed by the Global Leap. PATRP will review the SHS strategy in FY 2017.
- PATRP approached a company to provide technical assistance to develop a project of 40 mini-grids and with USD$8 million in EU/ECOWAS funding. PATRP identified support on pre-paid metering and remote control of the units as potential areas of support.
- PATRP established contact with the general manager of one of the main rural electrification concessions, Energie Rurale Africaine (ERA), a service company. ERA is responsible for the implementation of a rural electrification the central and southeast regions of Senegal. ERA seeks to implement 56 new mini-grids and rehabilitate 16 others no longer operating (diesel generators).
- PATRP provided initial support to SHS companies on pricing, agent management and models, and distribution networks.

ACCESS TO FINANCE

Multiple small businesses sought support in their search for grant funding to adopt PAYG and scale through B2B models. PATRP believes that success in West Africa for smaller companies requires efforts to build an owned distribution network. During this period, PATRP supported several applications to USTDA from local concessions and companies in Senegal. These were focused mostly on micro-grid feasibility studies that could serve as the basis for larger off-grid programs at the concession level. These included:

- A pilot project based on a USTDA application to test different technology models and also provide the company with advanced CRM management to ensure proper management of customer experience.
- A pilot project based on a USTDA application to address issues of remote control through the context of 33 mini-grids targeting 3,700 households.

PARTNERSHIPS

PATRP conducted several activities with the GoS, the World Bank, and USAID/Senegal:

- PATRP supported the USAID/Senegal mission in developing the terms of reference for a desk study on power in agriculture in Senegal. This study will support the process of creating a new PAD, which will include a component on the synergies between agriculture and energy.
- PATRP met with Senegal's National Agency for Renewable Energy (ANER) to learn about the projects that ANER is supporting. Projects include: (i) a draft decree to give tax incentives to RE equipment imports that was presented to the Prime Minister (currently stalled), (ii) feed-in tariffs, (iii) solar pump projects, (iv) social projects to provide electricity hospitals, schools, religious centers, etc. Pilot projects are generally financed by international agencies, with limited private sector involvement.

- PATRP met with representatives from the World Bank to discuss progress in Senegal and explore lines of collaboration. The World Bank shared the inception mission report for the SE4All project focused on developing a national rural electrification investment prospectus.

3.3.10 WEST AFRICA

The West Africa BTG Advisor conducted several meetings with off-grid companies to understand their expansion plans, including priority countries and timelines. Most of these companies have international presence and are active in the East African markets; they look at West Africa as the next region to expand their operations. During these meetings BTG discussed several options for expansion and market entry with the off-grid companies, including partnerships and joint ventures with local distributors. BTG identified Senegal and Côte d'Ivoire as two of the main markets in Francophone West Africa where off-grid companies were starting or looking to expand their operations.

In addition to off-grid companies, the West Africa BTG Advisor also held meetings with Mobile Network Operators (MNOs) interested in relying on renewable sources for tower operations. These MNOs have been actively looking at some off-grid companies to supply their energy needs; the BTG team discussed with the MNOs potential partnerships and off-grid companies that would be interested in providing this service.

3.4 OBJECTIVE 4: REGULATORY AND INSTITUTIONAL STRENGTHENING AND POLICY REFORM

3.4.1 SUB-OBJECTIVE 4-A: ELECTRICITY TRANSMISSION & DISTRIBUTION/REGIONAL TRADE, AND INSTITUTIONAL STRENGTHENING OF POWER POOLS

Under Objective 4, PATRP worked with stakeholders across the continent to: (i) support operationalizing the Eastern Africa Power Pool (EAPP); (ii) facilitate the development of new transmission infrastructure through the Nile Equatorial Lakes Subsidiary Action Program (NELSAP); (iii) improve grid management systems in Ethiopia and Kenya, principally to strengthen the respective power systems to be ready for the integration of new conventional and renewable generation sources and for sustainable and efficient operation of the national grids; (iv) support transmission efficiency and system operation in Nigeria and Tanzania; (v) identify system losses in Liberia; and (vi) engage in commercial loss-reduction efforts at three Nigerian DISCOs. Ultimately, each of these activities is intended to buttress efforts under Objectives 2 and 3 to either secure additional generation (MWs) or expand electricity access (connections).

Specifically, PATRP engaged in the following activities in FY 2016:

EAPP-IRB

The Eastern Africa Power Pool (EAPP) work stream supports the reliable interconnection of EAPP countries (to facilitate power trading) and the establishment of regional power market trading mechanisms. PATRP's efforts in this regard have focused on providing EAPP and its members with transaction support to

accelerate the establishment of a regional power market in Eastern Africa, and assisting the EAPP Independent Regulatory Board (IRB) as it strives to become an effective regional regulator for the power market in Eastern Africa.

In early FY 2016, PATRP developed a draft of the self-assessment process, which is part of the overall design of the EAPP Interconnection Code (IC) Compliance Program that was presented to the Steering Committee and Council of Ministers for approval in January 2016. The EAPP Interconnection Code includes a set of standards and measures to clearly specify what is required of member countries/utilities and what evidence is needed to determine whether an entity is in compliance with the each of the requirements set out in the Code. The EAPP IC Compliance program now seeks to ensure that all utilities and operators comply with the IC and that the EAPP transmission grid is operated in a safe, reliable, secure and efficient manner once trading begins in earnest. The EAPP IC Compliance Program made significant progress over the course of the year, meeting key milestones such as the rollout of the initial tasks of the implementation phase, the registration of compliance representatives from each member country, and the Self-Assessment and Mitigation Planning processes. PATRP provided all of the member countries with the tools and tutorials that they would need in order to implement the EAPP Compliance Program within their country's utilities. Once these tools and tutorials were released to all of the member countries, PATRP followed up and provided additional support to Ethiopia, Kenya, Tanzania, Uganda and Rwanda (EKTUR) utilities since they were the furthest along in interconnecting bulk transmission system tie-lines between their countries. PATRP conducted on-site meetings and workshops at each of the EKTUR Transmission System Operators, Generators and Distribution utilities to kick off the IC Program, including hands-on sessions with assigned compliance representatives on how to conduct an effective, accurate self-assessment of their current compliance with the IC Standards and to develop Mitigation Plans on any IC standards that they were non-compliant in order to close the gaps. These efforts will also promote bilateral trading arrangements until full trading under the EAPP begins.

PATRP also:

- Completed the registration of Compliance Representatives for all 29 EAPP member Transmission, Generation and Distribution utilities, IRB and EAPP Coordination Center.
- Rolled out of the Compliance Program Description, process and procedures, gap analysis tools, tutorials and instructional workshop on performing a self-assessment of compliance with the IC Standards.
- Ensured commencement of self-assessments with fifteen (15) EAPP members, including utilities from Ethiopia, Kenya, Tanzania, Rwanda, Sudan, and Uganda (nine have since submitted the self-assessments for review).
- Reviewed six of the nine Gap Analysis workbooks that were submitted to the EAPP by members and returned comments for their action on incomplete sections and further clarifications and information on their current state and gap descriptions.

Separately, through its transaction advisory assistance in Djibouti, PATRP supported Djibouti's application for membership of the EAPP, which was submitted in FY 2016.

NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM (NELSAP)

In FY 2016, PATRP assisted NELSAP's Project Implementation Unit (PIU), which is responsible for developing Transmission and Regional Generation, with its technical and commercial analysis on proposed interconnectors in the region – specifically:

- Zambia-Tanzania Interconnector
- Uganda, South Sudan, Ethiopia Interconnector
- Rusizi Rusomo Interconnectors
- Kenya, Uganda, Rwanda, DRC Interconnectors

PATRP also played a pivotal role in preparing for the first NELSAP Investment Project Conference in Nairobi in June, which was co-hosted by the Infrastructure Consortium for Africa (ICA) of the AfDB. PATRP developed materials and presentations to boost investor interest in the transmission asset creation program, which will ultimately facilitate greater regional energy trading. Most of the projects presented are now under consideration by Power Africa development partners, with NEPAD, AfDB and JICA finance approved for the Uganda-South Sudan interconnector.

ETHIOPIA & KENYA GRID MANAGEMENT SUPPORT

In Ethiopia, PATRP consultants met with local stakeholders individually and as part of the larger working group, and gathered technical data on system operations, system planning, and standards, as well as technical data on generation, transmission, and demand for both existing and planned projects. The system integration study (SIS) and system operational gap analysis (SOGA) work is ongoing, with results for some initial years and scenarios to be presented in early FY 2017. PATRP also developed a complete new draft Grid Code, and is working through the review/revision process with stakeholders.

In Kenya, the GMSP team worked with the Ministry of Energy and Power, ERC, KP, KenGen, Ketraco and the IPPs on draft versions of grid codes, and in the process consulted with various other stakeholders, including the Attorney General's office and Parliament. The final draft was delivered to ERC in Q3 FY 2016 for review and approval, an event that signaled the completion of a lengthy and complex process, initiated in mid-2014 and now resulting in the development of a grid code that is in line with international best practices. The grid code was subsequently approved by ERC and submitted to the Ministry of Power for consideration, and the gazettement process commenced, which is expected to involve the Attorney General's office and Parliament. The PATRP team continues to be available to support the ERC as they move through the grid code gazettement process.

NIGERIA – COMMERCIALIZATION SUPPORT TO DISTRIBUTION COMPANIES

Following a comprehensive diagnostic assessment of Nigerian distribution companies (DISCOs), three were targeted for Power Africa assistance: Abuja Electricity Distribution Company (AEDC), Benin Electricity Distribution Company (BEDC), and Eko Electricity Distribution Company (EKEDC). MOUs with each of the DISCOs were signed in Abuja in May, and PATRP teams were deployed to initiate work on loss reduction, collection improvement, and improved payment for energy and ancillary services.

Figure 3-13: Nigerian news coverage of the MOU signing

The goal of this support is to reduce technical and non-technical losses in the distribution system, and enhance revenue through better and more efficient business management. PATRP's work at the three targeted DISCOs is expected to create replicable models for other utilities in Nigeria.

Specifically, at AEDC, PATRP focused on the FCT South region, which has 141,000 customers, or about 18% of the total reported AEDC customer base. At BEDC, PATRP supports business units with over 136,000 customers, or about 18% of the total reported BEDC customer base. Finally, at EKEDC, PATRP is focused on two districts that contain 127,000 customers, representing approximately 30% of EKEDC's base. Accumulated Technical and Commercial (AT&C) losses in these areas are in excess of 45%.

In each DISCO, the PATRP teams worked with management and department heads to understand and improve each unit's functions, performance, metering, customer database, network schemes, business process mapping, energy balance, billing and collection, IT applications, and assets. One of the key changes PATRP instituted at the DISCOs in 2016 was to the commercial billing cycle. The DISCOs had been operating on a non-standardized, 90-day cycle. PATRP introduced a 30-day commercial cycle based on international best practices, starting with preparing reading sheets, readings, inputting data into the system, billing, bill delivery, disconnection and reconnection of customers.

Although implementation remains at an early phase, initial progress has been positive. Loss-reduction efforts have been better than expected, with Q4 FY 2016 seeing reductions in accumulated technical and commercial losses (from their baseline numbers) by 13% at AEDC, 12% at EKEDC, and 7% at BEDC.[11] The original targets were 7.5%, 4.5%, and 7.5%, respectively.

[11] The loss reduction numbers are only for the pilot areas/business units that are being directly supported by the PATRP advisors

Figure 3-14: Working with employees in the field at AEDC

NIGERIA – ASSISTANCE TO THE TRANSMISSION COMPANY OF NIGERIA (TCN)

In FY 2016, PATRP helped the Transmission Company of Nigeria (TCN) overcome barriers to complete a critical transmission line project: the 2nd Benin-Onitsha 330kV line crossing Edo, Delta and Anambra States. The project had been stalled for many months due to funding issues and unpaid invoices. PATRP assistance included developing TCN's action plan, convening an interdepartmental team, negotiating a handshake arrangement with the contractor to re-mobilize to the project site, and advising TCN management on how to reprogram funds in an existing AfDB loan facility to provide stopgap funding. The project was successfully completed and energized in February 2016. This transmission line adds 211 MW of system wheeling capacity from generation to load.

Another major milestone in early 2016 was NERC's decision to adopt the PATRP-prepared forecast of transmission revenue requirements (TRR) as the basis for the transmission use-of-system charge ordered by NERC effective February 2016. PATRP advisors developed the TRR based on detailed modeling of the company's budgets and accounts. The PATRP-prepared rate filing helped convince the regulator to more than double the transmission tariff compared to the prior level. TCN management has cited the successful rate filing as one of the company's most important achievements of 2015-16. This tariff increase represents a vital step in making TCN a more financially viable company that can self-fund its capital program and reduce reliance on government borrowing for transmission investments.

One of the key areas for PATRP support in 2016 has been helping TCN program the capital funding available for completing projects. Because government borrowing is only able to meet a portion of the investment requirements, it is critical that TCN should use the available funding to construct projects that will have the most immediate impact – particularly if the transmission system is to accommodate the targeted growth in generation. In Q3 2016, PATRP helped TCN select a set of projects to be constructed under a proposed USD$500 million loan to the Government of Nigeria. PATRP technical experts have also assisted TCN to optimally allocate other loans, including USD$365 million proposed by the World Bank and

USD$200 million from AfDB. The aforementioned loan facility is particularly important because it is the largest identified source of potential funding and seems to be on a faster track. PATRP helped to expedite the loan application by preparing the Project Appraisal Report, which was recently submitted to the Ministry of Finance via the Ministry of Power.

Finally, to promote increased private investment in transmission systems, PATRP has been assisting with preparations for the competitive procurement of an initial set of contractor-financed transmission projects, amounting to USD$200 million. PATRP assistance to date has included working with TCN staff to select the projects, developing a proposed framework for the transaction, modifying the World Bank template bidding documents for procurement of works, and developing the bidder eligibility criteria and bid scoring system. The Ministry of Power conveyed its approval in principle to proceed, and World Bank has expressed renewed interest in supporting a pilot transmission PPP. The prospect of private investment in the Nigerian transmission sector is considered an "early stage" transaction and there remain major barriers to be overcome.

TANZANIA – TANESCO TRANSMISSION

In Tanzania, PATRP is working with TANESCO's transmission division to ensure that all future generation projects can be effectively dispatched through adequate grid control operations and investment planning. To this end, in FY 2016, the PATRP team prepared a consolidated list of all large generation and transmission projects under development or classified as priorities by TANESCO's Planning Department. This assessment provided a clear picture of where new or augmented service is needed most, and will help ensure that the proposed transmission line projects are adequate to evacuate proposed new generation. Further, and as part of this support, PATRP developed and verified TANESCO system single-line diagrams (including 71 substations), and collected and verified technical information on transformers, power lines, capacitors, and other key to day-to-day operational information.

To improve long-term planning and decision making within TANESCO, PATRP began crafting an Integrated Resource and Resilience Planning (IRRP) guide, which will deliver a more robust set of data and information to inform action plans for utility operations. In parallel, the PATRP team conducted a training on Power System Simulator for Engineering (PSS/E) software, which is used by the majority of East African utilities, to build grid modeling capacity within TANESCO's Operations and Planning Divisions. PSS/E can be used to develop planning and operational models of the Tanzanian internal networks and tie-lines with neighboring countries. While TANESCO had access to PSS/E software in the past, they had limited experience in its use, and therefore lacked a current operational model used for day-to-day planning, operation and analytical needs. This five-day workshop, held in June 2016, provided much-needed training for TANESCO's technical staff, who are now capable of developing and modifying their national planning models. PATRP received very positive feedback on training content and methodology.

The PSS/E Training we had in June 2016 was so fruitful for us, as we learnt how to model the loads, overhead lines, machines, transformers, switched shunts, and so much more. We look forward to more training on load flow analysis and modeling of renewables as we improve our systems to benefit even more Tanzanians."

- Eng. Evalder S. Munisi
Manager Strategic Planning
TANESCO Ltd

PATRP is also charged with the restructuring of TANESCO within the framework of the *Tanzania Electricity Supply Industry Reform Strategy and Roadmap*. Specifically, PATRP is working with TANESCO to establish and develop an independent transmission system operator (TSO). In this direction, the following steps were completed:

- **Improving the TSO's organization and human resources** – PATRP prepared and presented the proposed TSO organization structure to the TANESCO Managing Director, the Deputy Managing Director (DMD) for Transmission, 14 managers and engineers from TANESCO's transmission and dispatch department, and the manager of the National Dispatch Center. The Managing Director indicated that they are in the process of reorganizing transmission and indicated that they would appreciate receiving the final structure for consideration and implementation. The DMD indicated that he was very pleased with the proposal and the content of what is proposed. In addition, PATRP finalized and shared with USAID and TANESCO a report on Human Resources Development and Training, which outlined recommendations on personnel management, including performance appraisals, salary structures, and gender integration.
- **Improving the TSO's budgeting and accounting** – PATRP worked with TANESCO's Accounting Unit to ring-fence the Transmission Unit's costs, and developed the Five-year Transmission Investment Plan. Based on these activities, PATRP developed the Five-year TSO Financial Model, which resulted in the annual TSO revenue requirements and transmission tariff margin. The Financial Model served as a basis for the TSO Business Plan, which details TSO operational, structural, and investment issues and risks, and provides a path toward a fully operational TSO by 2021. The plan will be presented to the TANESCO Board of Directors on November 30, 2016.

LIBERIA – LIBERIA ELECTRICITY COMPANY (LEC) LOSS REDUCTION

The program at LEC aimed to characterize the sources of transmission and distribution energy losses, identify how they may result from technical and non-technical sources, and develop a plan for reducing them to a level consistent with international utility practice using both technological and administrative measures. An inception report was submitted to USAID/Liberia following the initial kick-off meetings and data gathering. Follow-on activities were performed, including assessing revenue protection activities undertaken by LEC, making recommendations to improve performance, and reviewing LEC's billing cycle

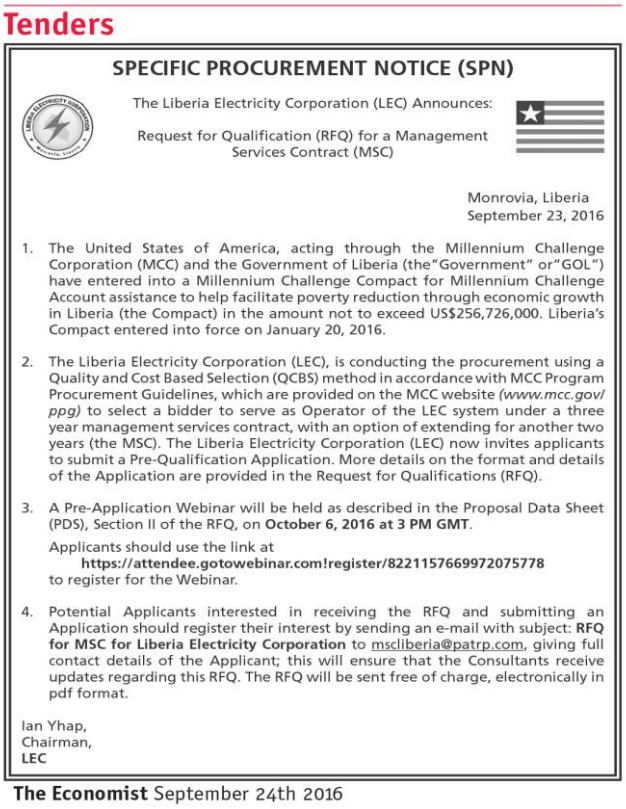
and metering systems. A final report outlining a loss-reduction program was delivered in Q3 FY 2016. In the report, the PATRP team identified many interventions that should be initiated to reduce losses in the LEC system. These interventions relate to many functional areas of LEC, including commercial processes, network management, and capacity building. An investment plan was also presented. These recommendations will be incorporated into the action plan prescribed for the new LEC management services contractor (see below).

Figure 3-15: PATRP/LEC field team conducting geo-referencing exercise for loss-reduction program

Additionally, PATRP is supporting the procurement process for a new management services contractor (MSC) for LEC. The new MSC will be expected to not only operate and maintain LEC's generation, transmission and distribution systems, but to improve performance, increase efficiency, and build capacity within LEC. The overarching goal is to support the Government of Liberia in achieving targeted levels of electrification and network expansion.

PATRP conducted due diligence activities in support of the tendering process, and submitted findings to USAID/Liberia in an Inception Report. A request for qualifications (RFQ) was issued in late September, and was publicized on leading procurement opportunity websites, such as Devex, UN Development Business, and DG Market. To reach an even wider audience, an advertisement was placed in the print edition of the *Economist* (see Figure 3-16). A pre-bid conference is scheduled for early October, and the full request for proposals (RFP) will be issued shortly thereafter.

Figure 3-16: LEC RFQ Advertisement in the *Economist*



Tenders

SPECIFIC PROCUREMENT NOTICE (SPN)

The Liberia Electricity Corporation (LEC) Announces:

Request for Qualification (RFQ) for a Management Services Contract (MSC)

Monrovia, Liberia
September 23, 2016

1. The United States of America, acting through the Millennium Challenge Corporation (MCC) and the Government of Liberia (the "Government" or "GOL") have entered into a Millennium Challenge Compact for Millennium Challenge Account assistance to help facilitate poverty reduction through economic growth in Liberia (the Compact) in the amount not to exceed US$256,726,000. Liberia's Compact entered into force on January 20, 2016.

2. The Liberia Electricity Corporation (LEC), is conducting the procurement using a Quality and Cost Based Selection (QCBS) method in accordance with MCC Program Procurement Guidelines, which are provided on the MCC website *(www.mcc.gov/ppg)* to select a bidder to serve as Operator of the LEC system under a three year management services contract, with an option of extending for another two years (the MSC). The Liberia Electricity Corporation (LEC) now invites applicants to submit a Pre-Qualification Application. More details on the format and details of the Application are provided in the Request for Qualifications (RFQ).

3. A Pre-Application Webinar will be held as described in the Proposal Data Sheet (PDS), Section II of the RFQ, on **October 6, 2016 at 3 PM GMT**.

   Applicants should use the link at
   https://attendee.gotowebinar.com!register/8221157669972075778
   to register for the Webinar.

4. Potential Applicants interested in receiving the RFQ and submitting an Application should register their interest by sending an e-mail with subject: **RFQ for MSC for Liberia Electricity Corporation** to mscliberia@patrp.com, giving full contact details of the Applicant; this will ensure that the Consultants receive updates regarding this RFQ. The RFQ will be sent free of charge, electronically in pdf format.

Ian Yhap,
Chairman,
LEC

The Economist September 24th 2016

REGIONAL INTERCONNECTORS – TO PROMOTE CROSS BORDER ELECTRICITY TRADE

Ethiopia-Kenya-Tanzania (EKT) Wheeling Agreement and Tariff. To advance the EKT efforts, PATRP drafted a transmission service agreement (TSA) and the KP accession agreement, which will eventually become an attachment to the TSA. Development of a standard interconnection agreement (IA) also commenced in FY 2016. The IA is to be executed between EEP and KP, and KP and TANESCO.

Ethiopia-Kenya-Tanzania-Zambia (EKTZ) Interconnector. A study funded by NELSAP on the EKTZ interconnector feasibility studies, now focusing on the Tanzania and Zambia portion, is entering its final options stage. PATRP identified shortfalls in the regional focus of the study and encouraged the consultants undertaking the work to allow for maximum North-South trade as opposed to simply balancing trade between the two countries. The countries agreed that the consultants should revise the configuration of the lines to take into account the agreed transfer capacity of 1,000 MW at commissioning and 2,000 MW at the next phase.

Separately, NEPAD, with PATRP support, began making arrangements for an investor's roundtable for the Tanzania-Zambia portion of the interconnector. The event is now scheduled for early 2017 in order to have the outcomes of the market study available to potential financial partners. In parallel, PATRP's embedded TA at NEPAD worked with the Office for the Promotion of Private Power Investment (OPPPI), which is tasked with overseeing the project on behalf of the three respective governments, on ways to attract

project financing by 2017. In this effort, the TA helped develop a Project Information Document (PID) for potential investors.

3.4.2 SUB-OBJECTIVE 4-B: POLICY AND REGULATORY REFORM

Over the past year, PATRP engaged in a number of policy and regulatory interventions intended to advance specific transactions, or to facilitate general energy sector investment. These efforts are summarized below.

NIGERIA – EFFECTS OF THE CBN CIRCULAR ON THE POWER SECTOR

PATRP produced a report on the current and potential future effects of the Central Bank of Nigeria (CBN) Circular, specifically on the operating entities of the power sector and other participants close to the sector, including banks and investors.[12] The Circular directs banks to extend foreign currency loans only to customers with foreign currency generating businesses, and to avoid redenominating loans originally granted in Naira to foreign currency loans where the customer does not have foreign exchange receivables.[13] This restriction includes the issuing of any instrument that would typically require the lender to back the underlying transaction with a foreign currency position – for example, Letters of Credit.

As operating entities in the Nigerian electricity sector have substantial foreign capital needs, the CBN Circular would significantly curtail investment in the power sector. This would, PATRP research found, have potentially far-reaching and damaging consequences for the Nigerian economy as a whole. Using the Power Africa Tracking Tool (PATT) database of transactions for Nigeria and the NBET pipeline of transactions, the report concluded that an investment of approximately USD$9.3 billion is required in order to finance 35 power projects that are projected to come online in Nigeria over the next three years, bringing 8.1 GW of power to the grid. However, if the projects are prevented from sourcing the required funding due to foreign exchange restrictions imposed by the CBN, or specifically as a result of the Circular, the abovementioned electricity capacity would be lost. In terms of economic impact, the loss of the 8.1 GW of power translates into an estimated USD$97 billion loss in annual GDP.

The report outlined a series of recommendations intended for USAID to share with relevant stakeholders within the Federal Government of Nigeria (FGN), which include either a lifting of the CBN circular or a carve out for the power sector thereby removing one barrier to badly needed investment into the sector.

KENYA – COMMUNITY ENGAGEMENT

Kenya has experienced stalling or halting of a number of important renewable energy generation projects due to local community opposition claims of a lack of prior involvement and adequate information. Consequently, PATRP is looking to support the private sector in developing energy projects that better involve, support, and protect the rights and interests of local communities. This work stream began in mid-2016, with initial activities focused on consultations with stakeholders (local residents, developers, government, etc.) and data collection. The next six months will see the production of a Community Engagement Framework, which will, among other objectives, identify the best methods for Power Africa

[12] A revised version of the report was requested and will be completed early in the first quarter of FY 2017.

[13] "Granting of Foreign Currency Loans to non-Dollar Generating Businesses," August 4, 2015.

project developers to provide communities with balanced and objective information on proposed projects and to obtain their feedback, and present a model for developers to use for enhanced community participation and collaboration through the project lifecycle, including environmental mitigation and management.

DJIBOUTI – DEVELOPING IPP FRAMEWORK /ACTION PLAN

With PATRP support, the IPP regulations for implementation of the IPP law promulgated in July 2015 have been drafted, and as of the end of FY 2016, were under review by Senior Officials at MERN. Moreover, substantial work was done by PATRP during FY 2016 to support MERN in the development of an IPP Action Plan, to define IPP projects that will be developed into an initial IPP competitive tender process, to support MERN's new role in the procurement of energy production, and to facilitate price discovery in Djibouti's new IPP market.

GHANA – LIQUIDITY AND CASH FLOW

PATRP supported the Government of Ghana as it searched for near-term measures to change the financial balance of the power sector, ensuring that cash flows allow all public and private financial commitments to be met and re-establish a sound investment climate. Specifically, PATRP developed a financial model aimed at forecasting the revenues and expenditure of the power sector, and a Revenue Waterfall System ensuring fair distribution of the sector revenues between the various creditors, based on contracts and regulations.

IPP TENDERING PROCEDURES + TARIFF BENCHMARKING

The development of competitive, well-organized, transparent and attractive procurement opportunities for developers and investors alike, forms an important step towards the achievement of Power Africa's goals. PATRP continued with the development of its proposed competitive procurement framework for IPPs following submission of a concept note in September 2015 to the Coordinator's Office. This activity was also used to buttress the nascent competitive procurement work in Ethiopia and Kenya – as further discussed below. In addition, PATRP supported the Government of Ghana as it launched international competitive procurements for 70 MWs of new solar capacity to be developed on an IPP basis.

Ethiopia

In early 2016, the Government of Ethiopia (GoE) launched an international competitive tender for a 100 MW solar PV project with plans to also procure 280 MW of hydropower via competitive tendering. Future plans include additional international competitive tenders for wind. In support of this program, PATRP conducted a study in April 2016 which aimed to determine a range of tariff prices which the GoE might achieve in grid-connected renewable energy power competitive tenders or auctions, and specifically whether the GoE could expect to achieve the low prices attained in recent auctions in large emerging economies. This benchmarking study also compared prices realized via REFiTs, directly negotiated prices and levelized costs of energy (LCOE), mainly in emerging markets and Africa, and this benchmarked data was adjusted for the market and investment conditions of Ethiopia. A four-step approach of (i) international price benchmarking (mainly in emerging markets), (ii) correlating renewable energy prices with country indices, (iii) considering additional factors influencing renewable energy bid prices and (iv)

determining price caps, was utilized. The analysis focused primarily on solar PV and wind energy, but also covered large hydro (> 50 MW) and biomass energy projects. A written report was produced for USAID and taken into consideration as part of the ongoing solar procurement.

A similar report was written for Kenya based on a request from the Ministry of Energy as it looks to migrate from its feed-in tariff program to competitive procurement for new generation. PATRP's findings were presented at a workshop in Nairobi in early 2016 and further engagement on the competitive procurement process is anticipated in FY 2017.

Nigeria

The Federal Government of Nigeria (FGN) recently established a goal of diversifying its energy mix, with a move away from thermal energy sources, as well as plans to introduce, for the first time, grid-connected solar PV power. In support of this, PATRP conducted a similar tariff study to that performed in Kenya and Ethiopia, with the aim of determining a range of tariff prices that the FGN might achieve in utility-scale grid-connected solar PV competitive bidding tenders or auctions, and specifically, whether it could expect to achieve the low prices realized in auctions in large emerging economies. The study showed that it has been proven from past experience that lower prices can be achieved for large-scale solar PV projects resulting from auctions or competitive tenders and the Nigerian REFiT was not an appropriate benchmark for assessing reasonable prices for large grid-scale PV projects. A written report was produced for USAID and shared with local stakeholders. Ultimately, the report's findings informed the agreed tariffs for the country's front-runner solar PV projects.

TANZANIA – PROCUREMENT OF PPP POWER PROJECTS AND CONTRACT MANAGEMENTS WORKSHOP

Figure 3-17: Attentive participants at the Tanzania PPP Workshop

In June 2016, PATRP conducted a workshop in Dar es Salaam, Tanzania, on (i) the promotion of Public Private Partnerships (PPP) in the power generation sector; and (ii) the management of power purchase management. PATRP's assistance was based on a request received from the USAID Mission in Tanzania, and the workshop was convened by the Ministry of Finance and Planning (MOFP). The purpose of the workshop was to produce a clear framework for the procurement of power sector PPP projects, based on international best practice. Tanzania's Public Private Partnership Act, 2010 (the PPP Act) and Regulations, 2015 are currently under review for amendment. The new Presidential Instrument (Discharge of Ministerial Duties Act) GN no. 144 of 2016, allocates responsibility for drafting amendments to the PPP Act and Regulations, to the MOFP.

The MOFP convened the workshop in order to facilitate a better understanding amongst key power sector players on the topic of international best practice for procurement of power sector projects, so that a clear, appropriate procurement framework could be developed. This new procurement framework would

Figure 3-18: PATRP consultant Prof Anton Eberhard presents at the Tanzania PPP Workshop

then guide, as necessary, amendments to be made to the PPP Act and Regulations. The MOFP was driven by an interest to ensure that the current cumbersome and lengthy PPP procurement process be streamlined for the power sector and further to ensure that the newly designed process acknowledges at the appropriate times, necessary review, consideration and approval from the MOFP given their significant role in issuing guarantees and approval of Power Purchase Agreements (PPAs) in terms of the PPP Act. In addition, the workshop provided a better understanding of managing PPAs and the resolution of disputes relating to PPAs, as requested by the MOFP.

PATRP submitted a comprehensive report with recommendations to the Mission in Tanzania following the workshop, which the Mission duly shared with the Government of Tanzania.

SOLAR PV PPA CAPACITY BUILDING SUPPORT TRIP (KENYA POWER)

From April 5-8, 2016, PATRP hosted delegates from Kenya Power in South Africa. The Kenya Ministry of Energy informed Power Africa that although it had negotiated and implemented PPAs for several renewable energy projects, none of them was for utility-scale solar PV projects. It realized that it did not have the expertise to conclude negotiations for these projects and requested support from Power Africa.

PATRP consequently arranged a trip to visit two Solar PV IPPs in Kimberley. In addition, meetings were arranged with the national electricity utility of South Africa (Eskom) and law firm Herbert Smith Freehills in Johannesburg. The overall purpose of this initiative was to provide legal and commercial capacity building support to Kenya Power on the terms of solar PV PPAs through a tour of operating solar PV plants in South Africa and holding meetings with key parties involved in solar PV projects. The delegation is now being assisted by the Power Africa team based in Nairobi to move forward.

Figure 3-19: Scatec 75 MW Solar PV Farm, Kimberley

Figure 3-20: Globeleq 50 MW Solar PV Farm, Kimberley

Mark Pickering explaining how power is converted and transferred onto the grid. (From left to right - Amé Viljoen, Pieter Botha, Mpho Makhetha, Beryl Nalo, Patrick Mawala, John Mwangi, Mark Pickering.)

Thank you for the warm welcome and the excellent hospitality during our tour of South Africa. Please convey KPLC's appreciation to your team for the very productive meetings and very informative site visits."

- Patrick Mawala
Energy Purchase and Regulatory Affairs Manager
Kenya Power

3.4.3 SUB-OBJECTIVE 4-C: NATURAL GAS

While Power Africa prioritizes renewable energy transactions wherever possible, the drop in global prices for natural gas, which has a cleaner carbon footprint than other thermal fuel sources, makes gas-fired power generation a viable alternative for large-scale electricity projects. PATRP's support for the advancement of natural gas projects is primarily concentrated in West Africa, with resident gas advisors in Nigeria and Ghana.

Together, PATRP's gas advisors and their colleagues delivered the following in FY 2016:

REVERSE FLOW OF GAS IN THE WEST AFRICAN GAS PIPELINE (WAGP)

PATRP assisted Ghana's Ministry of Power (MOPET) with several issues related to the West African Gas Pipeline (WAGP). Chiefly, PATRP supported efforts to interconnect the Ghanaian gas transmission network with the WAGP system to enable reverse flow of Ghanaian gas from west to east. In operation since 2008, WAGP was built to transport part of Nigeria's large gas reserves west to Benin, Togo, and Ghana. However, due to a lack of available gas in Nigeria, WAGP is currently operating at just 20% of its capacity. As more indigenous gas is becoming available in Western Ghana, there is a need to reverse flow to supply power plants in Eastern Ghana. To this end, PATRP supported MOPET by providing a policy paper for completion of a "free flow" phase, which will enable a reverse flow of 60 MMscfd. This will substantially reduce the gas imbalance between Tema and Takoradi, and initially allow the Tema plants to generate an additional 300 MW, then a total of 900 MW, as the plants switch from liquid fuels to gas. Phase 2, or the "compressed flow" phase, will enable reverse flow up to 150 MMscfd. PATRP will complete the scope of work on this phase by Q4 2017.

As the Government of Ghana (GoG) continued its negotiations with the West African Gas Pipeline Company (WAPCo) on the transportation tariff to be applied for gas deliveries in the reverse flow segment (Takoradi-Tema), PATRP developed an analysis of the projected tariff for transportation of natural gas through the proposed on-shore gas pipeline. PATRP determined that the current tariff was too high, as it was based on firm capacity allocation and capital cost recovery. Reverse flow, on the other hand is not

based upon capacity allocation and can be lower. PATRP, therefore, advised that the tariff should be renegotiated to recover marginal costs only, and assisted the GoG with the formulation and submission of a counter tariff proposal.

GAS MASTER PLAN AND NATURAL GAS PRICING POLICY

PATRP was instrumental in securing government approval of the Gas Master Plan (GMP) by first reviewing a draft developed by consultants engaged by the World Bank, organizing a stakeholder workshop to achieve consensus, and drafting a Cabinet Memorandum, which was approved in June 2016. An Action Plan for Implementation of Gas Master Plan was also developed and provided. The GMP is a 25-year strategy for Ghana (2016-2040) that lays out priorities for natural gas infrastructure development in an effort to boost sustainable economic growth and security of the national energy supply. Approval of the GMP moves Ghana one step closer to meeting conditions precedent for entry into force of the MCC Compact II.

LNG POLICY AND CAPACITY BUILIDING

The Gas Market Review (GMR) demonstrates the existence of a deficit in gas to meet power sector demand in Ghana. As Ghana plans to import Liquefied Natural Gas (LNG) to meet its increasing power sector gas requirements, PATRP conducted a comprehensive study on "LNG Markets and Contracting" and provided an Advisory Briefing Paper to the Ministry of Petroleum. PATRP supplemented this study with a related capacity-building workshop, which was widely attended by policy makers and sector agencies responsible for importing LNG.

GENERATION CAPACITY EXPANSION PLANNING

A Generation Capacity Expansion (GCE) model was developed in 2016 to evaluate the impact of projects under construction and proposed IPPs on Ghana's power supply/demand balance, and, in particular, the impact on national and regional gas demand from the gas-to-power (GTP) projects. The model used power demand and peak load and subtracts hydropower and renewable energy output to arrive at a thermal generation requirement. A PATRP analysis using the GCE model showed that capacity additions already under construction will progressively narrow the power supply deficit that caused the load-shedding of 2014-2015, and enable Ghana to achieve a power surplus in 2018. The Generation Capacity Expansion and Gas Allocation model and PowerPoint presentation was circulated to all stakeholders, including the ECG, VRA, MOP, and MOPET.

GAS-FUELED IPPS – NIGERIA

In Nigeria, PATRP worked with Nigeria Bulk Electricity Trading (NBET) on a range of activities designed to unlock the potential of gas-to-power projects. Specifically, PATRP provided legal and commercial assistance to NBET for a number of large gas projects, including Century (495 MW), Oma (500 MW), Yellowstone (350 MW) and Proton (150 MW), amongst others with a goal of having Power Purchase Agreements (PPAs) and Put/Call Option Agreements (PCOAs) fully negotiated. PATRP will also work with NBET to obtain approval of the Ministry of Finance and Ministry of Justice for these and other PPAs and PCOAs, thereby positioning as many projects as possible for financial closings by the end of 2017. In

addition, PATRP will provide support to NBET in the Qua Iboe (QIPP, 540 MW) transaction to ensure that the PPA and PCOA are concluded in 2016.

In addition, PATRP engaged an external consultant to conduct a rapid assessment of Nigeria's gas sector. This assessment produced a set of specific (and realistic) interventions and activities that can be implemented in the current environment with the assistance of the newly deployed resident Gas Advisor. From this work, PATRP and Power Africa will have a clearer sense of how transaction and technical assistance resources can be programmed in FY 2017 to achieve Power Africa objectives.

3.4.4 SUB-OBJECTIVE 4-D: MOBILIZING FINANCE AND BUILDING INSTITUTIONAL CAPACITY

As part of its core transaction advisory work, PATRP continued to support the identification and promotion of financial mechanisms to advance power projects and off-grid transactions. In the past year, these efforts have also included the development of new financing structures, as further detailed below.

DEVELOPING NEW FINANCIAL MECHANISMS

PATRP continued to work with Power Africa's Development Finance Institution partners and other financial partners to develop financing mechanisms (e.g. Blended Financing). For instance, in Kenya PATRP supported the creation of a Finance Steering Committee consisting of the CEOs of Citibank (East Africa), Standard Chartered (East Africa), PTA Bank, Africa Development Bank, Stanbic (Kenya), and Actis, among others, with a view on mobilizing cornerstone funding commitments (debt and equity) to finance the USD$14-18 billion funding gap in Kenya's power sector. Also, in Kenya, PATRP developed the concept for Kenyan "blended finance" to be implemented in FY 2017. This work included identifying several KenGen and IPP projects to be targeted with a blended finance offering, and also identifying several potential commercial lenders to partner with including Standard Chartered, Citibank, Standard Bank, and Investec.

LINKING PROJECTS TO FINANCING

The following examples illustrate the important role PATRP played in linking projects to potential financing options:

- PATRP engaged GreenWish Partners to provide detailed information and due diligence inputs on multiple Solar IPP projects. Presently GreenWish anticipates financing two Solar IPPs: eN Africa (50 MW) and Oriental (50 MW).
- PATRP engaged the African Development Bank regarding potential debt financing opportunities for both Solar and Gas projects. PATRP provided project-specific details/risk analysis and broader information on the macroeconomic/risk/investment climate in Nigeria.
- PATRP engaged Actis Capital regarding equity investment opportunities among the 14 Front-Runner Solar IPPs.
- PATRP supported Abraaj Group on their project due diligence for the KVK Solar Project (one of the 14 Front-Runner Solar IPPs). PATRP also provided advice on the Nigeria Integrated Power Project (NIPP) privatizations. Abraaj is exploring multiple acquisition opportunities, and PATRP is activity advising on two.
- PATRP actively supported the Black Rhino Group with a USTDA grant application to fund a grid connection study in the Kano area. This included explaining the USTDA application process, drafting

grid connection study terms of reference and assisting with preparing the final USTDA grant proposal. The BRG proposed project is a 100 MW Solar PV project in Kano.

- PATRP gained in-principle approval for a USD$100 million commitment from AfDB for the financing of Kenya's first BOT for transmission infrastructure, to be implemented in FY 2017
- Identified one Power Africa transaction to be refinanced with more favorable lending terms shortly after commissioning, thereby stimulating a secondary debt market for power projects in Kenya, to be implemented in FY 2017.
- Under the Power Africa/KenGen Cooperation Framework, PATRP helped KenGen pursue new financing structures, including SPV-level financing of non-recourse project finance (not previously pursued by them), to be further developed in FY 2017. A pipeline of around 280 MW is being targeted under this framework. PATRP also assisted KenGen with strategies to minimize its cash-funded equity contribution into new projects, including capitalizing historic development costs, earning a development premium, contributing steam wells in lieu of equity, contributing land in lieu of equity, etc.
- In Kenya, PATRP initiated discussions with relevant donor agencies (including Sida) to explore use of their commercial credit guarantee product, alongside a revised Government Letter of Support, with a view on reducing reliance on sovereign support and therefore speedier execution of project agreements.
- In Rwanda, PATRP proposed potential bridge financing for transmission projects, which are potentially backed by government guarantee, and engaged in initial discussions with the utility, Ministry of Finance and several commercial lenders regarding financing.
- The BTG team supported several applications to USTDA in Senegal, Nigeria, Kenya, Uganda, and Zambia, including guidance on relevant projects to present to USTDA, reviews and revisions of the applications, as well as budget requirements and limitations. To date, several were shortlisted and requested to present a full application and Terms of Reference, including four in Senegal, three in Kenya, one in Nigeria, and one in Zambia.

SUPPORT TO DCA FACILITIES

In Rwanda, PATRP canvassed local financial institutions on behalf of DCA to solicit interest in DCA offerings. PATRP held initial meetings with seven institutions and submitted analysis regarding ongoing energy projects and suitability for DCA. In addition, PATRP prepared a proposal for a DCA loan guarantee program on behalf of the Rwanda Mission.

The BTG team began supporting credit guarantee facilities in Senegal and Rwanda. In Senegal, BTG started discussions with a local bank and several micro-grid developers that would benefit from a local DCA program. In Rwanda, BTG started discussions with potential banks about their interest in the credit guarantee facility, particularly with a local bank that might receive funds from an MFI (World Bank) for lending to the energy sector, and would be in a great position to merge both capital and credit guarantees.

As reported earlier, in Ghana PATRP also assisted Early Power in securing a DCA guarantee. Recently, DCA circulated a draft term sheet for a Loan guarantee of USD$100 million, to support the financial close of Phase 1 in Q2 2017, and PATRP is also assisting with due diligence efforts, which are underway.

CAPTIVE GENERATION INNOVATION

Due to inefficiencies of many public utilities in sub-Saharan Africa, and the widespread lack of affordable, reliable power, many commercial and industrial (C&I) enterprises must rely on "back-up" or captive generation power solutions, which drives up their electricity costs. An increasing number of C&I enterprises are now actively looking at off-grid solutions, and a market for these cleaner, more reliable, and more affordable solutions is developing. One such group approached PATRP seeking assistance in developing a business and financial model to address this market requirement. PATRP provided assistance in: (i) developing the strategy; (ii) identifying the initial potential C&I client (in Zambia); (iii) securing a "Letter of Intent" from the Zambian client, (iv) drafting the business plan, (v) drafting the shareholders' agreement and share subscription agreement; (vi) identifying potential sources of funding to capitalize the business (underway); and (vii) setting up the corporate structures in both Zambia (to own the power plant assets in that country) and Mauritius (the investment holding company that will develop the broader business in the region). The group is using the pilot investment in Zambia to launch the business, where a <USD$15 million, ~4 MW plant will service the power requirements of Zambia's largest agribusiness entity through a combined solar PV and biogas solution. Additionally, the group has – with PATRP assistance – developed a healthy pipeline of other potential transactions, summarized in the table below.

Table 3-5: Captive Power Pipeline

Country	Sector	MW
Zambia	Agribusiness	4
	Manufacturing	60
	Mining	515
Namibia	Mining	55
South Africa	Residential	6
	Mining	50
Botswana	Agribusiness	20
	Mining	50
Malawi	Agribusiness	5
	Total	**765**

4. POWER SECTOR TRENDS

In compliance with contract requirements, this section highlights the power sector trends, developments, obstacles and barriers to private sector participation in those countries where PATRP had a presence in FY 2016.

4.1 CÔTE D'IVOIRE

4.1.1 TRENDS AND DEVELOPMENTS

Historically, Côte d'Ivoire has been at the vanguard of private sector participation in the energy sector. Since 1990, the marketing and distribution activities (with the exception of distribution network investment) have been undertaken by a private concessionaire, CIE, a subsidiary of ERANOVE group. In 1995, the first gas-fired BOOT came online (Ciprel), followed by the second in 1997 (Azito). Since then, there have been subsequent expansions of these IPPs, in addition to a lease agreement with Aggreko in 2010.

The electrification rate (population with grid access/total population) is relatively high at 76%. The effective connection rate of customers remains at 30%, mainly due to the high cost of connection. The Government is working with donors on an aggressive interconnection program (PEPT – electricity for all) that would double the existing one million customers over a period of five years.

The 2014 Electricity Law strengthened the legal framework for private sector participation in the sector. Nonetheless, to date only a few of the decrees to implement the law have been signed. Energy sector affairs are managed mainly by the Ministry of Energy and Petroleum, with legal transparency improving slowly.

Technical transmission losses are approximately 3.5%, while technical and commercial losses in the distribution system are near 17%. Commercially, the main challenge remains relatively higher losses in Abidjan's peri-urban areas, as well as low connectivity, given customers' decisions to not connect due to unwillingness or inability to connect to the distribution network.

At present, there is no clear strategy on the IPP/private sector procurement process, since most of the IPP initiatives have been direct negotiations undertaken by the Ministry of Energy, with sporadic requests for expression of interest for some renewable energy (biomass and PV). In this respect, with the exception of hydropower, there has not been a significant increase in the country's clean energy footprint and no incentives exist specifically for renewable energy.

4.1.2 OBSTACLES AND BARRIERS

Private sector participants that are already operating in the sector are committing to expand their capacity (e.g. Ciprel and Azito), provided that gas supply is guaranteed by the Government (GoCI). GoCI will likely keep retaining the fuel supply risk with import gas through an FSRU terminal. To this end, the lack of

transparency in the IPP process constitutes a barrier to new IPPs, as well as the limited and restricted role currently played by the regulator (ANARE).

4.2 ETHIOPIA

4.2.1 TRENDS AND DEVELOPMENTS

Ethiopia's ambitious plans to expand electricity generation capacity are constrained by various challenges that impede such plans to widen access and further export to the region. Notable among these challenges is the need to shift dependence on vulnerable hydro-electricity to other available resources such as geothermal and solar, yet the legal and regulatory framework for such resources has developed at a very slow pace (Ethiopia's first Geothermal Proclamation was enacted into law in September 2016; a Geothermal Regulation is currently in draft form and expected to be approved by the Council of Ministers in early FY 2017; and the Energy Operations Regulation as well as the amendment to the Energy Proclamation is in the process of being finalized).

The Geothermal Proclamation and Regulation, together with the Energy Proclamation and Operations Regulation, will contribute greatly towards providing clarity for future private investment in the energy sector.

On the whole, the country will be better positioned to attract private investment if it promulgates comprehensive legal and regulatory instruments that address at least the following important aspects: (i) a cost-reflective tariffs framework (including cost-reflective tariff calculation exercises, financial modelling and communications strategies regarding tariff increases); (ii) competitive tender frameworks to unlock the potential of solar, wind and other available technologies; (iii) procurement for new generation capacity underpinned by sound integrated electricity planning; (iv) model power purchase and implementation agreements based on international best practice; and (v) strengthened utilities/institutions operating within the energy sector (including building capacity on procurement and evaluation of tenders). Recognizing the importance of planning, EEP is taking a step in the right direction by currently developing a pipeline of critical generation projects for the next 10 years. The Government aims to develop various energy resources including hydro, geothermal, biomass, solar, and wind energy. This exercise will assist EEP in reviewing its existing generation master plan and recommend adjustments to the regulating body (EEA) on its overall integrated resource plan. In addition, development partners like the Danish Government (through the Danish Embassy in Addis Ababa) and the World Bank have identified the need to develop a coherent wind strategy.

4.2.2 OBSTACLES AND BARRIERS

Although Ethiopia aims to provide the private sector with the necessary incentives and support to participate in the development of the country's energy sector, lack of predictability and consistency deter such investment. To address this, the GoE must focus on assembling the building blocks for a strong and transparent legal and regulatory framework for the energy sector. Examples in this regard based on PATRP's experience this past year include the Corbetti transaction, where the ideal approach would have been for at least a basic legal and regulatory framework for geothermal energy development to have been in place prior to commencing transaction activities, to avert unnecessary delays and protracted negotiations.

Another significant barrier to private sector investment relates to foreign currency availability, convertibility, and transferability. It is submitted that the GoE should strive for better communication to the market and to make related information transparent and simple for investors to follow.

The credit rating of the country and the financial well-being of the utilities present further hurdles to private sector investment. The poor performance of the state-owned utilities has to be addressed by, among others, hiring competent executives with solid utility management experience and who are driven by managing these institutions like private sector businesses focused on operational efficiencies and customer service.

4.3 GHANA

4.3.1 TRENDS AND DEVELOPMENTS

Ghana has a relatively strong and transparent legal and regulatory framework in place. However, political considerations and directives often dictate which power projects should be given priority. On a positive note, after the first two competitively bid renewable energy projects were launched in the past twelve months (which showed that competitive bidding can secure lower pricing) the Government of Ghana (GoG) requested technical assistance to migrate towards competitive procurement for even conventional thermal projects. However, with the Presidential elections taking place in Ghana by the end of 2016, no major decisions are being taken and it is anticipated there will not be a shift in policy until after the elections and a new administration is in place.

Ghana has contracted more generation capacity than what is required in the short term. Due to the doubling of Ghanaian thermal generation capacity in the past two years, mainly due to completion of a number of public sector power projects, coupled with the financial difficulties being faced by the sector, the appetite for new generation capacity has reduced significantly during the last year. By way of illustration, when accounting for existing generation capacity, generation capacity under construction, recently approved projects, Ghana will have a temporary surplus of power from 2017 to 2019. As a result the need for additional generating capacity is only 268 MW starting in 2016 and increasing to 3,683 MW in 2030. The estimated cost of excess capacity is USD$300 million in 2017 and 2018 (assuming a take or pay contract), which will aggravate the accumulated debt and other financial problems within the sector (as further discussed below).

Excluding hydropower, the share of clean energy is approximately 22 MW, including a 20 MW Chinese private investment and a Volta River Authority project of close to 2 MW. A further 70 MW of solar power projects have been bid, evaluated, and are awaiting imminent award by early next year.

Creditworthy off-takers, chiefly the two main electricity distribution companies – Electricity Company of Ghana (ECG) and the Northern Electricity Distribution Company NEDCO) – are currently incurring huge losses and as such the energy sector's financial health is problematic. Government subsidies are required to keep them afloat. Reform in this area is proposed through introduction of private sector operators under the MCC/MIDA compact, but it will take at least 18 months to award the concession, and actual

improvements could only be expected much later. Moreover, as Ghana has requested assistance from the IMF, the country can no longer provide any sovereign guarantees to developers.

Cost-reflective retail tariff structures are currently not in place. It must be noted that the GoG raised retail tariffs by 59% towards the end of 2015 and experienced strong public outcry, which led to a reversal in the original decision. The Energy Commission (EC) and the Public Utilities Regulatory Commission (PURC) are studying the imposition of time-of-day tariffs.

4.3.2 OBSTACLES AND BARRIERS

The major obstacle to further private sector participation and investment remains the financial health of the sector and the possible oversupply of current projects under construction. According to the GoG's latest demand forecast, the GoG has signed more Power Purchase Agreements (PPAs) than required to meet the short-run power demand. Therefore, many potential projects that were being fast-tracked are being put on hold for one to two years, and will be re-phased to complete in 2020 or 2021. Other barriers/constraints include shortages of fuel, including shortages of gas and imported liquid fuels for the existing power plants and future power plants. The GoG is facing curtailment of gas supply from Nigeria, primarily due to non-payment to the West African Gas Supply (WAGP), which remains a barrier to adequate gas supply for the power plants over the next two years. Ghana will need to develop its own indigenous gas supplies and distribution pipeline during this time.

4.4 KENYA

4.4.1 TRENDS AND DEVELOPMENTS

Given the general perception in the market that there is currently excess power generating capacity (Kenya currently has a reserve margin of more than 35%), there is a sense of uncertainty from local and international developers present in Kenya regarding the appetite in the short- and medium-term to procure additional power, and also precisely what the framework, process, and evaluation criteria for additional power to be procured; and whether there is substance and guidance around the market "rumor" about an eventual transition from a Feed-in-Tariff (FIT) regime to a Competitive Auction procurement approach. This uncertainty raises the need for clearer guidance from regulators, specifically in relation to potential procurement of additional power generating capacity.

In large part, Kenya remains a single-buyer off-take market, with Kenya Power acting as the single buyer. Generally, Kenya Power is seen as a bankable entity in the eyes of most commercial and multilateral lenders, given the implicit Government backstop provided to KP by National Treasury. However, there remains an absolute need for Government to issue Letters of Support in bankable state to ensure large projects can proceed. The current Letter of Support is being recast and standardized by Government (to avoid ambiguities therein and carve out certain commercial risks which have been assumed over time).

Generally speaking, Kenya does have cost-reflective tariffs, given that the FIT is set at sufficiently high level. One might argue that the FIT level is outdated and would need to move downwards over time to incentivize more keenly priced power projects and acknowledge the global drop in capex for wind and solar projects. For example, the Government has started taking steps towards potentially terminating

historic, expensive PPA's – demonstrating intention to move towards generally more competitively priced power. The likely move towards a Competitive Auctioning regime will allow for more accurate price discovery of tariffs and therefore allow Kenya to achieve "true" cost-reflective tariffs.

State-owned entities are increasingly growing more sophisticated, and there is a general willingness to draw on international best practice and learn from regional success stories (e.g. South Africa's REIPPPP). Local banks remain cautious about financing the local renewable energy market (particularly at a project level, using typical non-recourse project finance products; their product range is aimed more at corporate lending opportunities). However, there is increased willingness to investigate this financing approach and allocate bank balance sheet toward this.

There is a strong integrated planning system in place across ministries, and across generation, distribution etc. However, Kenya may be at a crossroads (given the notion of excess power, and given the potential move towards Competitive Auctions), and the strength and efficiency of this integrated planning effort will be tested. The integrated effort must deliver and communicate to the market clearly around targets, process, timelines, and any transitional arrangements where relevant.

In general, project development would benefit from a more streamlined and transparent process. Projects spend an unnecessary long time in the development phase, mostly due to the difficulties in navigating the pitfalls around land ownership in Kenya, and the need to engage with local communities over a long period to flesh out a mutually beneficial, bankable arrangement, as well as the uncertain timelines and process to engage Kenya Power around PPA negotiation. Once PPAs are fully negotiated and once financing is secured, uncertainties remain around Kenya Power's ability to approve and sign PPAs in a timely manner. In later stages, there are often difficulties in dealing with the transmission system operator (Ketraco) and securing timely, bankable grid connection and transmission line solutions.

In terms of clean energy, Kenya has a very significant share, given its existing large hydro and geothermal generating base. Plus, there is currently more than 2 GW of clean energy projects in the national development pipeline. However, Government seems poised to support the approval of the 1 GW Amu Power coal-fired power project in the Lamu region, which will cause a regression in the clean energy agenda and also cause a slowdown in the adoption of more renewables.

4.4.2 OBSTACLES AND BARRIERS

As mentioned above, there is uncertainty surrounding the Government's appetite for additional power in the short to medium term, including uncertainty around the timing and approach to transitioning towards a Competitive Auctioning program. There is also uncertainty around the evaluation criteria to determine which projects may ultimately receive signed PPAs and GLOS (and within which timeframe).

Land, community and transmission lines issues may cause multi-year delays for projects wishing to reach financial close. These elements must be well structured and clearly addressed or else the project will not succeed. The final stages of the development phase (including the financing and signature of key documents such as PPA and GLOS) inevitably take several months longer than hoped for (given the macro uncertainties around procurement of additional power), causing periods of developer inaction and frustration.

In these circumstances, the Government should clarify and communicate to the market the following:

- Government's desired energy generating mix.
- Government's desired size of generating portfolio.
- Timeframes, processes, and evaluation criteria for procurement, and details around transitional arrangements in relation to a potential move towards Competitive Auctions.

4.5 LIBERIA

4.5.1 TRENDS AND DEVELOPMENTS

Liberia has approximately 60 MW of installed capacity under the Liberia Electricity Corporation, with some 108 MW of projects in the pipeline, including:

- 10 MW HFO funded by Arab Bank for Economic Development in Africa (BADEA), to be completed in 2018.
- 22 MW from Mt. Coffee hydro plant (one of four turbines), to start operations in December 2016.[14]
- 66 MW from Mt. Coffee hydro plant (rest of the three turbines), to start operations towards middle of 2017.

The CLSG transmission line, currently under construction, will have an eventual capacity of 290 MW (in two, 145 MW phases), with Liberia's share dependent on negotiations and power purchase agreements.

Tariffs are not cost-reflective, and are presently fixed at USD$0.49/kWh (as of May 1, 2016), down from an earlier rate of USD$0.52/kWh. The government is trying to bring the tariff down further, but this has proven difficult due to high costs of diesel-based generation and a significant rate of losses in the system. A loss-reduction study delivered by PATRP in July found that for every 100 units of electricity generated, the national utility (LEC) receives payment for only 68 units, meaning 32 units of electricity are squandered due to technical and non-technical losses, or payments are simply never collected. The study suggests that LEC must invest approximately USD$18.5 million in loss-reduction measures over the next five years to make the utility sustainable.

4.5.2 OBSTACLES AND BARRIERS

Although several studies have been done, no official national electricity master plan is available from GOL or MLME.

As mentioned above, the tariff in Liberia is one of the highest in the world due factors such as the costs of diesel-based generation, system losses at the national utility, and a lack of local solutions to address the slow pace of electrical infrastructure development. The tariff can be reduced when the generation mix shifts from diesel to more cost-effective sources, such as hydro. This will require long-term planning and an action plan for harnessing the available hydro potential.

[14] This first turbine was commissioned in Q1 FY 2017.

The government's ability to fund projects is very low, resulting in a high level of donor-funded activities.

The Electricity Law of 2015 is under implementation, and accompanying regulations are under development. Full implementation and realization will bring necessary clarity to the sector structure and attract additional private sector investment.

Among the biggest needs is the development and management of a more efficient national utility. Building capacity within LEC will lead to faster implementation of projects. Increased clarity on institutional set-up and regulatory framework is essential to attract private participation. A national electricity master plan is also critical to show a defined direction of electricity infrastructure growth. Immediate goals should include the turnaround of LEC to make it self-sustainable, and the completion of ongoing generation, transmission, and distribution projects through strategic planning and monitoring. The government must also strengthen the enabling environment by fully implementing the Electricity Act and framing enabling regulations.

4.6 MALAWI

4.6.1 TRENDS AND DEVELOPMENTS

An amended Electricity Act was passed in 2016, and an IPP framework was drafted. However, although significant components of the framework are being used in the first-ever solar IPP procurement, the overall framework has not been formerly adopted.

The government's power utility, ESCOM, has made significant progress towards becoming creditworthy, supported by MCA Malawi initiatives.

The Malawian Government has a formal commitment to cost-reflective pricing as part of the MCC compact. MCA Malawi is assisting ESCOM and other industry stakeholders advance this commitment by determining the level of cost-reflective pricing and implementation of tariff adjustments to reach it.

Malawi is undergoing major changes in its electricity industry and intense scrutiny due to short-term supply constraints and longer-term power generation capacity deficits. The power sector is therefore facing increasing demands on its technical capability. However, it is the commercial areas where the pressure to perform more efficiently is most intense.

Malawi has a well-developed public procurement legislative framework, however the application of this framework is impacted by concerns over transparency. This situation is exacerbated by Malawi's history of poor corporate governance. If the power sector follows the public procurement framework and applies the IPP framework, it will have a basis for clarity and transparency in power procurement. However, the major stakeholders in power procurement need to both apply these frameworks and effectively communicate throughout the process to ensure that the power procurement achieves this.

Malawi's power sector has a commitment to establish an integrated resource plan (IRP) to create the major power sector planning policy document. The IPP framework (and Malawi's public procurement legislative framework) requires that an annual power procurement plan be developed from the IRP. There

is, therefore, a theoretically sound and strategic basis for integrated power planning. However, it is not yet clear that power planning will be applied consistently with the developed frameworks and the IRP.

The processes for project development in the Malawian power sector are not yet at a point where they could be described as streamlined or transparent. For private developers, the processes have been described in the IPP framework, but this has not yet been formally adopted. In the meantime, a joint project development process between ESCOM and IPPs who have signed PPAs with ESCOM has been documented and recommended in order that any project development issues are identified and remedied.

Malawi has a predominantly renewable power sector already. In fact, the Malawian power sector is out of balance with too much dependence on run-of-river hydro. Malawi needs dispatchable power stations, so although new renewable power stations are being procured, Malawi is also building new thermal power stations. Indeed, Malawi is targeting a major increase in electricity access from all possible sources and solutions.

4.6.2 OBSTACLES AND BARRIERS

The most significant barrier to private sector participation in Malawi's power sector is uncertainty and hesitation in completing IPP procurement. This has arisen in part due to confusion concerning the governance and the roles of ESCOM and the Ministry of Natural Resources, Energy and Mining (MNREM) in Malawi's electricity sector, particularly with respect to IPP procurement.

ESCOM is the default procurement agent for IPPs, but MNREM have been active in signing memoranda of understanding (MoUs) with IPPs and procuring advisory services to assess a range of IPPs. MNREM does not appear to have a mandate for IPP involvement, and the Minister of Mines and Energy has recently moved to clarify the roles. The resulting confusion has spread to the effectiveness and clarity of communication and caused concern amongst stakeholders. The lack of an explicit procurement plan which ESCOM is mandated to implement is also contributing to a lack of clarity.

ESCOM's human resources capacity is also a factor because it is currently in a state of transition and the staff responsible for IPP procurement activities are burdened with new roles, old responsibilities, and transition activities.

Malawi's limited capability to provide sovereign guarantees for termination liabilities and foreign exchange repatriation loom as potential barriers. However, these are untested at this point in IPP procurement.

The Power Africa resources in Malawi have coordinated to assist the sector in clarifying the situation regarding IPP power procurement and have recommended remedial action. This support should be continued by providing positive guidance to move forward with an appropriate IPP procurement plan.

4.7 NAMIBIA

4.7.1 TRENDS AND DEVELOPMENTS

NamPower is a creditworthy off-taker, and there are three regional distribution companies that were recently permitted to purchase power from IPPs. Retail tariff structures are generally cost-reflective, and NamPower has an investment-grade rating and is reasonably efficient. In financial terms, NamPower is one of the strongest utilities in sub-Saharan Africa, but it needs assistance dealing with IPPs.

In terms of sector reforms, the government is considering a reorganization of the power sector to move away from the single-buyer model. The government has been slow to move to procurement from private IPPs. There is an "Interim REFiT" program underway, with fourteen 5 MW plants awarded and one 37 MW solar PV plant under competitive tender.

The regulator is developing an integrated resource plan (IRP), and a competitive processes for project development with IPPs is underway. KfW will implement a GETFiT program as a follow-on to the interim REFiT program, which is supported by USAID.

Namibia is seeing an increased clean energy share, with a focus on solar PV and a desire to move into biomass. Electricity access is 75% in urban and 25% in rural areas, but the country is heavily reliant on imported power (at least 60% of total), which is driving a push for off-grid solutions in remote and rural areas.

4.7.2 OBSTACLES AND BARRIERS

The inexperience in dealing with IPPs, and lack of real consensus on developing the power sector are obstacles for further private sector involvement. There is also a limited knowledge of grid capacity and ability to absorb renewables. NamPower should be encouraged to bring more power from IPPs online in an effort to reduce imports, as well as completion of a grid analysis with the possibility of implementing a grid management support program.

4.8 NIGERIA

4.8.1 TRENDS AND DEVELOPMENTS

Legal and Regulatory Frameworks

Nigeria has made great strides in strengthening its legal and regulatory framework. However, the Electricity Power Sector Reform Act (EPSRA) has come under scrutiny for being outdated and not addressing critical needs in the market, such as electricity theft, which left undeterred will continue to rob the market of significant funds needed to serve the electricity value chain. The EPSRA is also lacking in detailed agreements, subsidiary laws (such as the Grid Code), and regulations of the Nigeria Energy Regulatory Commission (NERC), without which there cannot be a truly strong and transparent legal and regulatory framework.

Creditworthy Off-takers

NBET is the designated off-taker of electrical power that was established pursuant to EPSRA. The creditworthiness of NBET is a critical outstanding issue in the context of NBET's ability to fulfil its payment obligations pursuant to the PPAs signed with the pending solar IPPs.

Besides NBET and the DISCOs, the other major off-taker in the electric sector is the ISO. The ISO is responsible for collecting tariff revenues from the DISCOs and paying the services providers. At present, ISO is collecting only around 20% of the allowable revenue that NERC has approved for service providers, partly owing to shortfalls in DISCO payments. For TCN, the reduction in cash flows severely impacts the company's ability to meet its obligations to operate, maintain and improve the Nigerian grid. Unlike NBET, there was little thought given to setting up financial backstops for the ISO in case of revenue shortfalls. As a result, ISO is not creditworthy as an off-taker for procuring expanded services.

Cost-Reflective Retail Tariff Structures

NERC has a well-conceived tariff framework in place, the Multi-Year Tariff Order (MYTO), which is used to set tariffs. However, the tariff process is often challenged by the perception that NERC views customers as being unable to afford the full cost. Other tariff issues include:

- **Over-forecasting:** Generators are on track to deliver around 26,000 GWh in 2016, compared to NERC's forecast of 38,639 GWh used for setting the unit-based rates in MYTO 2015. At the time, the Commission failed to take into account TCN's filing demonstrating that NERC's forecast was far too high, resulting in tariffs far too low. For the transmission and distribution companies, it has meant that they are only able to bill customers for a fraction of the allowable revenue requirements for the year.

- **Exchange rate:** The current tariffs use a Naira/Dollar exchange rate of 200/1, compared to the 304/1 official CBN rate, and a black market rate that is much higher.

In the past, the tariff was structured over a 5-year period and NERC prescribed tariff orders with limited consultation with the DISCOs. This process changed during the last tariff-setting exercise. First, NERC re-structured the tariffs over a 10-year period that would allow for over recovery during later years, but under-recovery during the first few years of the 10-year period. This would alleviate the shock of any tariff increase, as the increase would be gradually sculpted over a longer curve. Also, the 10-year tariff would match the 10-year license period. Secondly, NERC invited the DISCOs to submit their respective tariff proposals, which was a significant deviation from its previous practice of prescribing tariffs to the DISCOs.

Technical and Commercial Efficiency

Much of the country's electricity distribution and transmission infrastructure is either inadequate or non-existent. Furthermore, the sector is facing a liquidity crisis due to insufficient revenues flowing through the electricity value chain, which prevents the market from reaching commercial efficiency. Partial and total system collapses are all too common because of the poor state of the system. The recent jumps in inflation and the Naira/Dollar exchange rate have played havoc with contractors' original bid prices, which may have been submitted many years ago. There is a looming concern in the industry that non-completion

of some high priority TCN projects may create bottlenecks for generation evacuation once the ongoing natural gas shortage is dealt with. Unfortunately, the development and Exim banks that finance TCN projects have signalled unwillingness to support TCN's ongoing projects with gap funding and no immediate solution has been identified.

On the positive side, projects that were fully funded from the start have been proceeding to completion. These include the World Bank-financed projects that are managed separately from other TCN projects, many of the NDPHC transmission projects and a few of the TCN projects. These projects will significantly enhance system stability and reliability when completed.

Power Procurement Processes

Nigeria continues to use a negotiated transaction system for procurement of power. However, steps are being taken to migrate towards a competitive format for renewable generation. NBET does publish a clear and step-by-step guide on its unsolicited procurement process and outlines the requirements that a power project developer must follow in order to be considered for negotiations. Also, its last round of executed solar PPAs was followed quite closely by the industry, and there was significant transparency.

Power Sector Planning

There is no plan that captures the true integration of wholesale power, system reliability, environmental constraints, fuel choice, transmission, capacity expansion, and all key operational elements of generators on the power grid in a linear optimization framework. TCN System Planning is supposed to play a central role in planning with responsibility for the annual Resource Adequacy Plan and periodic updating of the transmission master plan. The Ministry of Power also plays an important role and has retained a consultant to prepare an Integrated Energy Resource Plan with grant funding from JICA, and a consultant to prepare a Transmission Master Plan. Both have been impacted by long delays related to funding and data collection.

Project Development

The process for power project development in Nigeria has become more streamlined and transparent than it was in the past. NERC provides a checklist of requirements that must be satisfied in order to apply for a license. As mentioned above, NBET also currently publishes a clear and step-by-step guide that outlines the requirements that a power project developer must follow in order to be considered for the negotiations of its PPA. There are currently seven key ministries with direct policy-making responsibilities in the energy sector, which intersect with the functions of 13 other regulatory bodies. There are a total of 21 ministerial and regulatory players, and their roles need to be clarified, possibly consolidated, and streamlined to potentially create a one-stop shop for prospective project developers.

Clean Energy & Universal Electricity Access

In 2016, Nigeria made a meaningful commitment to increase its share of clean energy with the initialling of grid-scale solar projects promising more than 1,000 MW. Existing hydro projects are being repowered to increase production. There appears to be a growing awareness of small-scale clean energy potential.

DISCOs have been given the responsibility of implementing expanded electricity access through grid-supplied power, but universal access through the grid is probably not feasible. A number of DISCOs are partnering with small IPPs to develop embedded generation facilities, which should increase off-grid access to electricity.

4.8.2 OBSTACLES AND BARRIERS

There is one overriding obstacle to private sector participation and investment: the revenue shortfall of the energy sector. Beyond this, there is a need to provide for currency convertibility on a practical basis to attract foreign capital. While contractual arrangements have been agreed, the reduction in foreign revenues from sale of oil has limited the ability of Nigeria to provide hard currency.

For gas-fired power plants, two additional key obstacles are the lack of an adequate gas supply, and lack of grid capacity to accept power from large new power stations. For solar projects, obstacles include the inability of the Government of Nigeria to meet its PPA payment obligations due to shortages of revenue from distribution companies; availability of foreign exchange in the market to allow investors to convert the local currency into a hard currency and repatriate profits outside of Nigeria in a timely manner; current challenges on free inflows of capital investments in the power sector; and an overall country investment downgrade due to a contraction in the oil market.

NERC's orders are promulgated on an arguably ad hoc basis with limited consultation with the industry stakeholders. This represents significant regulatory risk for a prospective foreign investor.

Poor DISCO collections account for the majority of the sector's liquidity issues, as there are insufficient revenues to service the electricity value chain. Most, if not, all of the private utilities have been highly leveraged and reached their borrowing limits. The local banks have also maxed out their capacity to lend as utility investors borrowed funds from the local banking industry to finance their acquisitions.

The transmission segment of the electricity value chain represents a crucial bottleneck as certain regions remain underserved due to poor or non-existent transmission infrastructure.

Lack of adequate gas infrastructure, too, is an obstacle. Currently, there are no commercial incentives for gas producers to build the infrastructure necessary to transmit gas to the generation facilities. For one, gas infrastructure faces a high risk of vandalization, and secondly, the gas suppliers are not guaranteed a sufficient return on infrastructure investment as the country's current generation facilities are unable to pay for gas supply. The price of gas for domestic consumption also needs to be reviewed in order to provide an incentive for more gas producers to sell to the domestic market.

Recommendations

The first and most critical step would be to improve the DISCO collections as they are the collection agents for *all* of the power market participants and solely responsible for the revenue that flows through the entire value chain.

To solve the industry liquidity issues, an intervention is recommended to provide advice and analysis of various options, including some that appear to have been overlooked by government.

The simplest way to address foreign exchange risk would be for NBET to pay the seller of power in foreign currency, but this may not be possible. An alternative would be for the tariff to include a very structured foreign currency indexation formula, although this would require some form of hedging instrument to hedge the foreign exchange exposure. The PPAs could also include stabilization clauses, which would ensure that the PPA remain stable in the face of various changes to the pricing and economic conditions that were present when the PPA was negotiated. Lastly, the PPA could benchmark the amount of the buyer's payments in local currency to the foreign currency at the prevailing market exchange rate.

Material progress is being made to utilize privately controlled on-shore gas fields to supply new power plants, and this should be encouraged. It should be noted that the issue of gas supply and the convertibility of currency issue are linked because gas is currently priced in USD in Nigeria. The feasibility of using Naira for some portion of gas sales should be evaluated.

4.9 RWANDA

4.9.1 TRENDS AND DEVELOPMENTS

Enactment of a PPP law in May 2016 will ensure all energy projects go through a proper project preparation and competitive procurement process. The state utility is currently commissioning a consultant to conduct a least-cost development plan to improve its ability to operate cost-effectively and ensure that its build program aligns with least-cost development principles.

RURA, with support from NARUC, is working with the utility to develop a charter of accounts that will help build a cost-reflective tariff.

The government issued a Rural Electrification Strategy (RES) in June 2016 to promote the use of off-grid renewable energy to address rural electrification. Subsequent to the enactment of the RES, the government signed agreements with 16 companies to enable deployment of systems in the off-grid market.

4.9.2 OBSTACLES AND BARRIERS

The government has not provided proper guidance on the impact of the PPP law on investors that have projects in the pipeline, although it seems from consultations with government technicians that only projects which have signed MOUs or other agreements will not be subject to the PPP law.

Analysis from government stakeholders seems to indicate that the government could have an oversupply of generation that is not cost-effective (as most contracts are base load, take or pay contracts) by 2021. As such, they have stopped any procurement of new generation.

The EAC has removed "solar accessories" from duty exemption, and although the legislation is intended to target TVs, radios and other non-power generating accessories, there is a concern that the legislation

could cool development in the off-grid sector or cause the costs of certain solutions to increase for end-users.

4.10 SENEGAL

4.10.1 TRENDS AND DEVELOPMENTS

Senegal does not have a cost-reflective tariff structure, and the state utility (Senelec) remains dependent on the government for financial support. However, the recent decline in fuel prices has forced the government to decrease its financial support to Senelec (i.e. almost 50% between 2011 and 2014, from USD$250 million to USD$130 million).

Senelec's technical losses are estimated to be around 13%, while commercial losses are approximately 9%. The commercial loss rate does not include non-payments from municipalities and other government agencies; therefore, the real number is likely to be higher. This undermines Senelec's ability to generate positive cash flow.

Despite the presence of a clear law that prescribes a competitive procurement process, the development of new generation remains oriented toward direct negotiations. To date, only the IFC Scaling Solar program developed has used a competitive tender process. Unsolicited offers are numerous and MoUs are signed frequently.

Senegal has clearly defined objectives for improving its overall energy generation mix and aims to increase the renewable generation component to more than 20%. It is, however, unclear whether new intermittent energy can be effectively integrated to the grid owing to the lack of a spinning reserve and the poor state of the network.

Senegal has a significant effort underway to accelerate rural electrification with a goal of 100% coverage nationwide by 2025. However, despite the delineation of ten concession areas for mini-grids, of which only six are allocated, the rate of rural electrification is still below 30%. Several measures have been implemented, but a lack of resources undermines the goals.

4.10.2 OBSTACLES AND BARRIERS

In Senegal, several barriers stand in the way of greater private sector participation and investment. The regulatory framework is unclear, and the contracting process is viewed as complex and often prolonged (which dissuades potential investors). In this context, the development and use of standardized documentation could make policymakers more comfortable with a competitive procurement process. Other assistance should include development of an optimized generation and transmission master plan, and creation of a one-stop shop for competitive procurements.

4.11 SOUTH AFRICA

4.11.1 TRENDS AND DEVELOPMENTS

Through the Renewable Energy Independent Power Producer Procurement Program (REIPPPP), South Africa has procured the construction of 6,300 MW from 95 projects. The IPP office has been successfully staffed by professionals or consultants to ensure the transparent award of PPAs. The project documents (PPA, Implementation Agreement and Connection Agreement) have been successfully banked by a combination of the domestic commercial banks and DFIs, thus demonstrating a world-class procurement process in the renewable energy sector.

Although the PPA counterparty is the national utility, Eskom, the National Treasury Department provides an ultimate payment guarantee and thus lenders have been aggressive with interest rates and tenor, particularly the commercial banks. There have been strong black economic empowerment (BEE) and community bidder requirements and, as such, DFIs also provided realistic terms for funding these shareholders in projects.

The bidding tariffs have reduced significantly in line with international trends. For example, solar PV has reduced from R2.79/kWh in 2009 to R0.79/kWh in 2016 (USD$0.21 to USD$0.06). Although the integrated resource plan (IRP) is now outdated, the Government of South Africa continues to look at pursuing a nuclear power strategy, which is hampering the grid-connected renewable energy program. Contrary to Government policy, Eskom has also announced that it will not sign the latest REIPPPP PPAs, which has caused uncertainty in the IPP market.

Owing largely to the developed state of the South African economy, where large and long-established construction companies exist, the construction of many projects have been successfully completed, sometimes in consortia with international EPC contractors.

The Department of Energy (DoE) issued the Cogeneration IPP bidding documentation in 2015, which was meant to be Phase 1 of the cogeneration procurement process. However, projects had to reach commercial operation by November 2016, which by implication meant that the projects had to be under development at the time the bids were issued. The timeline left no room for project design and procurement, thus Window 1 was entirely unsuccessful. Window 2 has yet to materialize, and it appears as if DoE is grappling with tariffs, amongst other factors. In the interim, this is likely to result in non-utility-scale embedded generation projects, including both on-balance sheet and third-party IPP projects.

Market attention is currently focused on the pending gas procurement to be launched by the IPP Office. Gas-fired power had been identified in 2010 Integrated Resources Plan as a way to boost capacity and this recommendation led to the Ministerial Determinations for power capacity procurement. Reflecting the need for a diverse and secure range of primary energy sources, the Department of Energy undertook the creation of the Gas Utilisation Master Plan (GUMP) over 2014-2015 and this expanded scope to the development of a wider gas industry. In this context, 3,000 MW (of the 3,126 MW under the Ministerial Determinations) of LNG based power is now under consideration by the IPP Office and on March 22 2016, the Minister of Energy determined that a further 600 MW would be required.

4.11.2 OBSTACLES AND BARRIERS

The REIPPPP program has been very successful, and while the local participation in equity and local manufacturing requirements have created some challenges, developers have successfully met the bidding requirements. Current challenges largely stem from market skepticism surrounding Eskom's willingness to implement the government's IPP policy.

Generally, the regulatory framework is in place, well-proven and bankable. The integrated resource plan needs to be updated and anomalies in the legislation to be corrected.

In the off-grid space, there is a lack of clarity for off-grid IPP participation. The COFIT/COBID program has come to a grinding halt with no indication of when it will recommence. Furthermore, there is a lack of progress from the regulator, NERSA, to issue generation licenses for off-grid IPPs. All applications that are not in the Integrated Resource Plan (IRP) have been put on hold since 2012, unless the deviation from the IRP is approved by the Minister of Energy. NERSA and DoE need to resolve this regulatory uncertainty for IPP participation in off-grid generation.

4.12 TANZANIA

4.12.1 TRENDS AND DEVELOPMENTS

Despite continuing challenges facing the Tanzania power sector, the country continues to attract credible IPP investors. However, a key problem is the lack of creditworthiness of TANESCO, the power utility, which causes delays in negotiations of PPAs, as well as in the mobilization and cost of finance. This is becoming an important issue given the large number of IPPs in the pipeline.

Tariffs are not yet fully cost reflective. Emphasis appears to be placed initially on improving efficiencies in transmission and distribution as a way of offsetting higher average generation costs (trending from an average of USD$0.055/kwh to USD$0.075/kwh over the next few years). However, tariffs also need to be increased if the goal is to make TANESCO creditworthy, thereby reducing dependence on central government guarantees.

Among other key reform measures being considered is the unbundling of TANESCO into strategic business units with the objective of improving operating efficiencies in each unit. Currently, the plan is to make transmission the first unit to be unbundled.

Tanzania has yet to tender its first IPP project, continuing to operate almost exclusively on projects for which proposals have been submitted by private sector companies on an unsolicited basis. Legislation is being developed to define processes and roles of ministries in the review, negotiation and approval of PPP transactions. A first draft of the new act detailing these issues will be sent to the legislature in November 2016. The act is expected to be enacted in the first quarter of 2017.

At least six solar and wind power IPP transactions are under development (Shinyanga 60 MW solar; Makambako 100 MW wind; EA 100 MW wind: Dodoma 50 MW solar; Hecate University of Dodoma 55 MW solar; and Upepo 75 MW wind), amounting to 460 MW. There is also interest on the part of one

investor to develop solar-powered electricity on a captive basis for the big mining companies located in the northwest.

The pipeline also contains at least four hydro projects (Lukosi River 30 MW; Rumakariya 500 MW; Ruhidji 360 MW; and Kakono 87 MW) for a total of 977 MW. The smaller ones are likely to be implemented by TANESCO, while the larger ones may require private investment as the respective investment outstrips TANESCO'S ability to deliver the required capital.

The focus on solar, wind, hydro, CCGT gas- (>1,600 MW) and coal-fired (700 MW) plants will substantially change TANESCO'S energy mix within the next 5-10 years.

4.12.2 OBSTACLES AND BARRIERS

Obstacles and barriers to private sector participation and investment include:

- lack of creditworthiness of TANESCO
- lack of cost-reflective tariffs
- lack of emphasis on coordinated centralized planning
- fast pace of generation investment, potentially outstripping by a considerable margin demand for electricity, including latent demand
- lack of coordination between TPDC (as gas supplier) and TANESCO (as gas user or off-taker of IPP production)

A key problem in generation investment is the TANESCO management goal of implementing a grid with 5,000 MW of power by 2020 and 10,000 by 2030. A problem with this is that the demand for electricity does not appear to match the pace of forecast generation. An unpublished demand study by ICF estimates the need for (at best) 2,300 MW by 2025.

5. ENVIRONMENTAL COMPLIANCE

5.1 OVERVIEW

In March 2015, USAID approved the PATRP Initial Environmental Examination (IEE) in accordance with U.S. Federal Regulation (USAID 22 CFR 216). Although PATRP is a technical assistance program, the IEE recommended a Negative Determination with Conditions for the PATRP program as a whole because of the common and potentially significant impacts of energy sector development activities when implemented. The overall status of PATRP's fulfilment of the IEE Conditions for FY 2016 is provided in Table 5-1: IEE Compliance Activities.

Mitigating actions specified under these conditions apply only to PATRP Objectives 2 (Late-Stage Transaction Support) and 3 (Small-Scale Projects and Rural Electrification/Mini-Grids Support). Objectives 1 (Institutional Support to Power Africa Coordinator's Office) and 4 (Regulatory and Institutional Strengthening and Policy Program) have no additional conditions attached to them, other than to observe the general commitment to integrating environmental and social safeguards into activities. For Objectives 2 and 3, USAID (through PATRP) supported transactions, whether existing or new, where no other USG agency is conducting environmental and social (E&S) appraisal in terms of its own regulations, an environmental and social screening process is conducted before PATRP can provide transaction advisory services. The E&S screening process follows the flowchart shown in Figure 5-1, which complies with IEE's Section 4.5.

5.2 THE TRANSACTION SCREENING PROCESS

For all transactions listed in PATT, PATRP conducts and documents E&S impact screening in one of two ways:

- By completing a more detailed E&S review checklist called the PATRP Environmental and Social Review Methodology (PESRM) Checklist. In addition, and to allow for a more rigorous screening, if it is a hydropower transaction, PATRP performs a PESRM Supplementary Checklist, or
- By confirming that another USG agency, multilateral development bank (MDB) or international financial institution (IFI) is conducting E&S impact screening or assessment of the transaction using its respective processes.

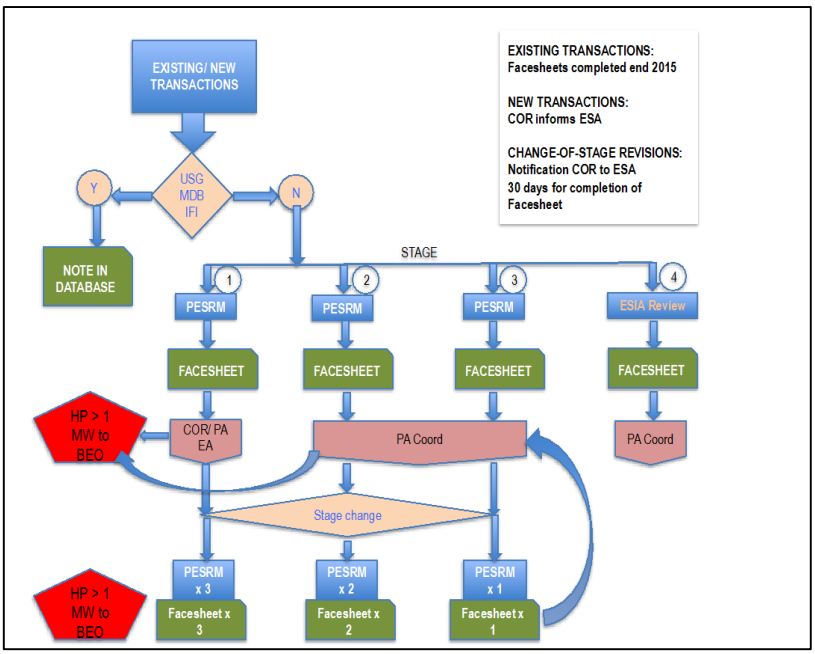
The PESRM screening process comprises a desktop due diligence mechanism for identifying environmental and social impacts and constraints at a site-specific level. It considers such aspects as:

- Developer and/or key partners involved in the transaction, their track record and policies in place relating to labor practices and sustainability
- Nature of the project, including technical details of the components and extent of the infrastructure
- Governance framework, including country frameworks and policies on environmental and social issues

- Land tenure status and resettlement issues
- Environmental considerations, including biodiversity impacts and project emissions
- Social/cultural/political/economic considerations, and country risk – including issues such as government stability and conflict situations.

PATRP re-screens transactions and their previously completed PESRM checklists when transactions move from one stage to another in the project cycle, or change significantly in scale, scope, technology or location. A key decision point in the process is whether or not another USG agency, MDB or IFI is involved in the transaction, and if it is following its own E&S review, assessment, and due diligence approach. If this is the case, a note is inserted in the transactions (PATT) database, and nothing further needs to be done until that transaction moves to a later stage or significant scope and scale changes occur. If this is not the case, then PATRP conducts a more detailed review of E&S aspects of the transaction, in line with the PESRM Checklist and completes a face sheet that is cleared by the Power Africa coordinator or his/her designee. The completed checklists and face sheets for these projects are shared with the Power Africa coordinator and the Regional Bureau Environmental Officer.

Figure 5-1: E&S screening process flowchart



The PERSM checklist has also undergone some revisions during the period in question in order improve the flow of the document. For instance, questions on gender have been collated in one place, and project information now features earlier, with impacts/issues later on. In addition, questions viewed as duplicative have been eliminated.

5.3 FULFILMENT OF IEE CONDITIONS

Table 5-1, below, details the actions taken by PATRP in FY 2016 in fulfillment of the IEE conditions.

Table 5-1: IEE Compliance Activities

IEE Condition	Requirement	Comments
1	Establish a process for tracking and screening existing, new, and reclassified transactions	Tracking: The PATRP E&S Specialist maintains a register of all Power Africa transactions logged in PATT and tracks the status of transactions supported by PATRP and other USG or IFI/MDBs (as well as their respective stage changes) as well as the PESRM Checklist progression. This information is shared with the Coordinators Office on a regular basis. Screening: Of the 165 transactions tracked by the Power Africa Tracking Tool during 2016, 130 were PATRP supported transactions identified for further Environmental and Social (E&S) due diligence. For the remaining 35 transactions, the presumption remains (as per the IEE) that PATRP transactions with involvement of other USG Agencies, IFIs or MDBs are subjected to that organizations own due diligence procedures. Progression of PESRM Checklists: In 2016, PESRM Checklists for a total of 42 PATRP supported transactions were completed as reflected in Table 5-2. Of those, 20 were for hydro, 10 for solar, 4 for wind, 6 for natural gas and 2 for geothermal transactions. Seventeen PESRM checklists were completed upon review of the ESIA Reports. All checklists completed at the time of writing were approved by USAID. All approved PESRM Checklists have been uploaded to the PATT system. Seven transactions were re-subjected to the PESRM Checklist due to progression into later stages or upon review of the ESIA Reports. A total of 68 PESRM Checklists have been completed since PATRP's inception (representing a total of 104 transactions).
2	Power Africa review of E&S checklist to determine whether continued support appropriate (for rescreening or new transactions)	Transactions with ESIA deficiencies: Continued PATRP support of three transactions (two solar, one wind) in Nigeria was tentative in 2016 based on significant deficiencies in the respective ESIA reports. For the two solar transactions however, the partners have since indicated their intention to update the ESIA reports to international / lender standards. The third transaction is currently on hold. Transactions identified as high risk: The site of the Koukoutamba hydropower project reservoir in Guinea, in addition to the significant human displacement potential, conflicts with a proposed national park which sustains a large population of endangered animals. A review of the project ESIA in 2017 is required to inform continued PATRP support. Not eligible for USG support: PATRP support to the Souapiti hydropower project in Guinea was withdrawn in FY 2016 based on findings in the PESRM Checklist.
3	Review of ESIAs for stage 3 and 4 transactions (Power Africa will not provide support to any Stage 4 transaction without a completed ESIA party to that transaction)	During 2016, 17 ESIA Reports were sourced and reviewed by PATRP using the PESRM Checklist format (see Table 5-2) bringing to 33 the total number of ESIA Reports reviewed. Ten of the ESIA reports sourced and reviewed in 2016 were for transactions at Stage 3A or 3B. ESIA Reports / EA permits for all PATRP transactions currently at Stage 4 have been received. USAID support is recommended to be withdrawn if no ESIA Report has been provided by Stage 3B, however there were no instances of PATRP withdrawing support on this basis for the period under review.
4	Resources: Power Africa to make available links to E&S soundness policies and procedures of USG agencies as well as IFC, Equator Principles and carbon principles. If USG agency policies are not available, Power Africa is to list regulations governing E&S impacts of agencies and	PATRP has sourced and has provided the following E&S policies / procedures from other USGs to TAs in accordance with this condition: • USADF Guidelines for Environmental Compliance (MS-220), July 2012 • OPIC Environmental and Social Policy Statement • OPIC Environmental Guidance Notes for hydro, solar, wind, geothermal, biofuels projects • US EXIM International Environmental and Social Guidelines • Statement regarding USTDAs consideration of E&S impacts

IEE Condition	Requirement	Comments
	provide links to their public statements.	
5	Staffing: Power Africa through PATRP to make available an E&S advisor to complete PESRM checklists, provide E&S social soundness on activities and serve as a resource to relevant staff as needed.	PATRP's E&S specialist, who is employed on a full time basis, undertook the following activities during 2016: • Tracked all Power Africa transactions and identified relevant transactions for screening in accordance with IEE Condition 1 • Requested project information and ESIAs Reports from TAs • Completed 42 PESRM checklists (see Table 5-2) in accordance with IEE Condition 1 • Communicated findings and recommendations of PESRM Checklists to TAs as confirmation of follow-up actions • Prepared material and conducted E&S training to TAs and other support staff in February and August 2016 (IEE Condition 6) • Provided technical support to TAs and other Power Africa partners in the preparation of documentation for lender finance and provided an advisory role on PATRP's position to hydropower (IEE Condition 7) • Prepared an Environmental Monitoring and Mitigation Plan (EMMP) for PATRP (see Condition 7) • Undertook weekly and quarterly reporting and consistently brought significant E&S issues to the attention of Power Africa leadership (IEE Condition 8) through the PESRM Checklist process
6	PATRP, with support from Power Africa, to provide training to PATRP staff including transaction advisors, relationship managers, other USAID staff and implementing partner staff. Training will empower staff to address, promote and help overcome barriers to E&S soundness in PATRP transactions.	E&S training was prepared and conducted by PATRP's E&S specialist over two weeks in February 2016. The material was updated to accommodate lessons learned during the program and additional training held in August 2016. Both sessions focused on 1) PATRP's IEE and its conditions 2) PATRP's role in ensuring sustainability of power transactions and mainstreaming environmental issues and 3) Environmental and Social Impact Assessment with a focus on power generation. The training also drew from E&S experiences of specific transactions and highlighted other USG E&S policies and also international best practice guidelines of the IFC/World Bank.
7	Advising: Power Africa / other relevant staff to provide recommendations to private sector partners on adhering to international E&S best practice	• In observation of the recommendations and action items listed in PESRM Checklists, PATRP's E&S advisor engages with TAs on the next steps. In the current circumstances the TAs are tasked primarily with querying shortfalls of ESIA to good/best practice standards, sourcing additional planning phase project information and offering support (where applicable) in terms of social and gender mitigation and integration. • In accordance with Section H7 – item 5 of the PATRP contract, an Environmental Monitoring and Mitigation Plan (EMMP) or mitigation and monitoring (M&M) plan must be prepared describing how the conditions of the IEE will be implemented. PATRP developed the EMMP in April 2016 to address the higher level IEE requirements. It further served to provide universal mitigation measures of potential impacts for power and energy sector investments facilitated by Power Africa in line with good practice.

IEE Condition	Requirement	Comments
		• In March 2016, PATRP provided technical assistance in the development of an Environmental and Social Management System and Stakeholder Engagement Plan following IFC guidelines in support of Proton Energy's application for OPIC assistance. • In May 2016 the E&S specialist undertook a World Bank readiness review of the Kingline Gas-Fired Power Plant ESIA for the developer
8	Reporting: Report to Power Africa leadership any significant environmental and social issues with respect to a transaction or party they are engaged with	In 2016 the following transactions were escalated to Power Africa leadership due to their potentially significant environmental and social impacts: • Souapiti 515 MW HPP, Guinea. PATRP support for the transaction has been withdrawn. • Chemoga Yeda 1 & 2 HPP –downstream countries successfully lobbied against China Exim Bank in 2011 resulting in their withdrawal from the project. The significance of this issue will be tested in the updated ESIA Report which will be reviewed by PATRP. • Solar Transaction (Nigeria) – ESIA deficiencies raised by PATRP. The ESIA is currently in the process of being revised. • Solar Transaction (Nigeria) - ESIA deficiencies raised by PATRP. The ESIA is currently in the process of being revised. • Wind Transaction (Nigeria) - ESIA deficiencies raised by PATRP. The transaction has been placed on hold until further notice.
9	Screen hydropower transactions in PESRM supplement	20 hydropower transactions were subjected to the PESRM Checklist in 2016 of which only 9 were additionally screened against the hydropower supplement. This is because the necessary technical and environmental baseline detail necessary to populate the supplement is usually contained in project ESIA Reports.

Table 5-2: Transactions screened/rescreened through the PESRM Checklist in FY 2016

No.	Name	Technology	Country	Stage	ESIA Review complete
1	Chemoga Yeda **	Hydro	Ethiopia	1	Yes
2	Platinum Power	Hydro	Côte d'Ivoire	1	No
3	Koukoutamba	Hydro	Guinea	1	No
4	Tiboto	Hydro	Côte d'Ivoire	1	No
5	Tahibli	Hydro	Côte d'Ivoire	1	No
6	Luapala River (5 transactions)	Hydro	Zambia	1	No
7	Tams	Hydro	Ethiopia	1	No
8	36 hydropower transactions	Hydro	Guinea	1	No
9	Debre Birhan	Wind	Ethiopia	1	No
10	Bumbuna II **	Hydro	Sierra Leone	2A	Yes
11	Sombwe **	Hydro	DRC	2A	Yes
12	Abaya and Tulumoya	Geothermal	Ethiopia	2A	No
13	Kalahari GeoEnergy	Geothermal	Zambia	2A	No
14	ContourGlobal Markala	Hydro	Mali	2A	No
15	Metahara	Solar	Ethiopia	2A	No
16	Xago Kogelo	Solar	Kenya	2A	No
17	GTDC	Solar	Ethiopia	2A	No
18	EleQtra	Wind	Senegal	2A	No

No.	Name	Technology	Country	Stage	ESIA Review complete
19	Yellowstone	Gas	Nigeria	2B	Yes
20	Nyabuhuka Mujunju	Hydro	Uganda	2B	Yes
21	LR Group	Solar	Nigeria	2B	Yes
22	DuSable Solar	Solar	Nigeria	2B	Yes
23	Songon Power	Gas	Côte d'Ivoire	2B	No
24	Nova	Solar	Nigeria	2B	No
25	Green Cowrie	Solar	Nigeria	2B	No
26	Xaris (Walvis Bay) **	Gas	Namibia	3A	Yes
27	Proton Energy	Gas	Nigeria	3A	Yes
28	Bridge Power	Gas	Ghana	3A	Yes
29	Ruzizi III	Hydro	Burundi	3A	Yes
30	Panyam	Solar	Nigeria	3A	Yes
31	JBS	Wind	Nigeria	3A	Yes
32	Aboadze Globeq	Gas	Ghana	3A	No
33	Atlas Energy	Solar	Malawi	3A	No
34	Malagarasi	Hydro	Tanzania	3B	Yes
35	Tindinyo	Hydro	Tanzania	3B	Yes
36	Mbongozi	Hydro	Malawi	3B	Yes
37	Nyamabuye	Hydro	Uganda	3B	Yes
38	OMVS Manantali	Hydro	Mali	3B	No
39	Kabompo	Hydro	Zambia	3B	No
40	Kesses 1	Solar	Kenya	3B	No
41	Aysha	Wind	Ethiopia	3B	No
42	Souapiti *	Hydro	Guinea	Inactive	No

* PATRP support to transaction withdrawn
** ESIA reviewed but additional information requested by PATRP

As indicated in Table 5-2 above, for the majority of transactions subjected to the PERSM Checklist, an "acceptable" level of compliance (i.e., no risks were identified that could not be adequately mitigated) was demonstrated and environmental impacts are either not yet fully documented (due to the absence of ESIA reports), or mitigation measures prescribed in the management plans are commensurate with the anticipated impacts. Several transactions do warrant more affirmative monitoring or follow-up by PATRP in order to obtain additional information or to address minor deficiencies in the ESIA Reports.

As indicated in Table 5-1, two of the three ESIA Reports with significant deficiencies are currently under revision in compliance with international standards. Based on findings in the PESRM Checklist for the 515 MW Souapiti hydropower project in Guinea, it was recommended that PATRP support to the transaction be withdrawn.

6. GENDER INTEGRATION

Women make up more than half of the 600 million people who lack reliable electricity in sub-Saharan Africa. Energy policies and access, therefore, impact women significantly, which is why Power Africa supports projects, programs, and policies that strive to reduce gender inequalities and promote increased participation of women in the African energy sector. In turn, PATRP endeavors to integrate gender into all operations, including work planning, scopes of work, and recruitment. This is in line with the growing attention paid to gender as energy issue, based on the growing body of evidence for the benefits of gender diversity in decision-making across all sectors. PATRP's Pretoria-based Gender Advisor leads on these efforts, and is responsible for implementing PATRP's Gender Integration Strategy, described below. Moving forward, PATRP aims to more aggressively target female candidates for recruitment as transaction advisors.

6.1 GENDER INTEGRATION STRATEGY

PATRP's Gender Integration Strategy, developed and approved in FY 2015, sets out clear goals, approaches, and implementation plans to incorporate gender-related considerations into all activities. This strategy is implemented by PATRP's Gender Advisor, and includes the following activities:

- Review and provide timely input into all key PATRP documents, including transaction advisor performance metrics, handbooks, monitoring and evaluation plan, and all work orders to include a gender component, where relevant, if not already included.
- Include highlights and achievements with respect to advancing gender equality and women's empowerment in information provided by PATRP for Power Africa annual reports, quarterly newsletters, and website.
- Share information on best practices and lessons learned relating to gender and small-scale renewable energy from Power Africa activities on existing virtual platforms (such as Gender Equality for Climate Change Opportunities, a USAID-funded initiative).
- Convene workshops for PATRP staff to create an understanding of why and how to integrate gender into PATRP's activities. Workshops will be individually tailored to be relevant to the work of management, transaction advisors, relationship managers, and other staff as appropriate.
- Identify potential and unforeseen negative impacts from Power Africa-supported activities through gender integration into the PATRP's PESRM and propose interventions to mitigate the impacts.
- Build the capacity of transaction advisors to integrate gender into their transaction-based activities and in their engagement with key ministries through training, information sharing, and resource development.

6.2 GENDER INTEGRATION ACTIVITIES

In support of the Gender Integration Strategy, described above, and in coordination with her Power Africa counterpart in Washington, PATRP's Gender Advisor led the following in FY 2016:

6.2.1 TRANSACTIONS

On an ongoing basis, the Gender Advisor aims to identify opportunities for gender integration in large- and small-scale transactions and bring the opportunities to the attention of the transaction advisors. In general, integrating gender into late-stage transaction support remains a challenge, as entry points are difficult to identify or do not exist in the context of the support that PATRP is providing, which are primarily financial and technical. The many country level activities are needs based at various stages of a transaction whereas gender is more effectively integrated during project design based on a gender analysis. However, in FY 2016, PATRP did have some gender integration advancements:

- In Nigeria, the BTG Advisor was encouraged to apply a gender lens to the selection process for off-grid support. Out of the six companies selected, one is women-owned and one has a women's empowerment component in the business model. Subsequent to this selection process, the BTG team sought the support of the Gender Advisor to integrate gender into the company assessment tool that was developed to identify companies for PATRP support.
- When the Southern Africa Transaction Advisor was participating in the selection committee for Power Africa-supported Sida Off-grid Energy Challenge, the Gender Advisor provided a checklist of gender-related considerations for the project review process.
- Gender was integrated into the business plan of the TANESCO TSO with the support of the Gender Advisor.

6.2.2 CAPACITY BUILDING

Over the course of the year, PATRP's Gender Advisor strengthened the capacity of PATRP Transaction Advisors (TAs) to integrate gender into country activities. A webinar on the role of transaction advisors in integrating gender in PATRP was presented in February 2016, and a slightly revised version was repeated in August for TAs that had joined PATRP subsequent to the first presentation.

While impact of the training has not been formally assessed, there is some evidence that some transaction advisors are able to apply to a gender lens in their work. For example, following participation in the webinar, one TA noted the percentage of female ownership of the project sponsor in a completed QTAT. This is a clear indication of an understanding that such information is in fact relevant when qualifying transactions.

The webinar really helped me understand how we need to think about gender equality in all of our work activities, in everything we're doing."

- PATRP Transaction Advisor

Capacity building, particularly with the transaction advisors, will continue, as part of the Gender Integration Strategy. Webinars on more specific gender-related themes, to be determined, will be developed and presented. The Gender Advisor will also work with TAs to identify opportunities to integrate gender into PATRP-supported capacity building activities at the country level.

To further support PATRP management and staff, 36 publications on gender and energy have been compiled into a folder on PATRP's SharePoint drive. These resources include background papers, country information, guides and toolkits, and reports. Information on mainstreaming gender into energy projects and energy policy, gender and renewable energy, women's economic empowerment, gender and infrastructure, as well as country-specific gender and energy related information, is included in this virtual resource center. Resources are added on an ongoing basis, and new resources are shared directly with the TAs via email as they are identified.

6.2.3 WOMEN IN AFRICAN POWER (WIAP)

PATRP provides continued support to the Coordinator's Office to grow and coordinate the Women in African Power (WIAP) network. PATRP maintains a database of WIAP members and relevant details on them; 288 names are currently in the database. The Gender Advisor also manages the WIAP LinkedIn group, which has 253 members to date. Information relevant to women in the energy sector, including topical reports and news articles, is shared on this platform. The Gender Advisor also maintains a roster of female experts in the energy sector. Throughout the past year, the Gender Advisor created several opportunities to promote these women to speak at major energy conferences to which Power Africa was invited. Female speaker recommendations provided by PATRP were taken on board for the Africa Energy Indaba, the Africa Infrastructure Conference, the East Africa and West Africa Power Industry Convention.

To enable the Power Africa Coordinator's Office to identify avenues of support for women in the African energy sector, a directory of women-owned businesses is being developed. The directory will be a resource of interest for the members of Women in African Power.

PATRP supported the Coordinator's Office to organize a WIAP networking breakfast for 40 guests at the Africa Energy Forum in London in June, as well as the Women in Energy Innovation Breakfast held at the Powering Africa Summit in Washington in January.

Figure 6-1: Ellen Dragotto of USAID, Deo Onyango of GE Renewable Energy, Kathleen O'Dell of Deloitte, Karen Breytenbach of the South Africa Department of Energy, and Angela Nalikka of the African Development Bank at the Women in Energy Innovation Breakfast

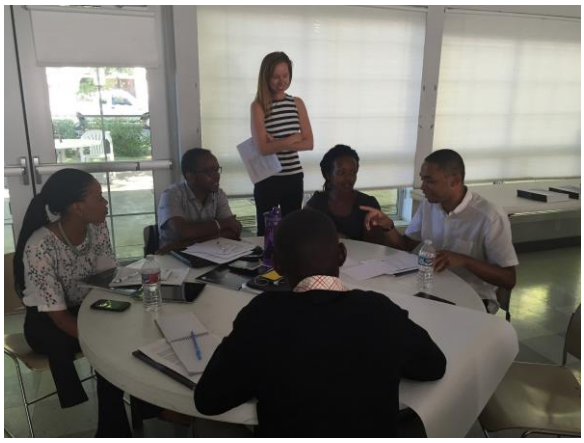
6.2.4 POWER AFRICA GENDER INTEGRATION WORKING GROUP

PATRP leads the Power Africa Gender Integration Working Group, which is facilitated by the Gender Advisor and the gender focal points for McKinsey and AGI, as well as Power Africa's gender expert at USAID. Meetings are convened monthly via teleconference and provide a platform for information sharing between the Power Africa implementing mechanisms regarding gender integration in Power Africa. Specific requests for cooperation can be made amongst the group. For example, the PATRP Gender Advisor sourced a number of resources on gender and rural electrification for AGI to inform their support to Rwanda's rural electrification strategy.

6.3 REPRESENTING POWER AFRICA

Outside of PATRP, the Gender Advisor provided training on gender and energy to the 2016 YALI Fellows Energy Institute at the University of California-Davis in June. Following the training, a USAID contracted consultant prepared a draft curriculum for a similar training to be presented at an African university. The Gender Advisor reviewed the draft curriculum and feedback was provided.

Figure 6-2: Power Africa Gender and Energy Workshop with YALI Fellows



Power Africa's Gender Advisor engages YALI Fellows in a small group exercise as part of the new Energy Institute hosted at the University of California, Davis.

Figure 6-3: Power Africa Gender and Energy Workshop with YALI Fellows

YALI Fellows share country experiences in groups at the new Energy Institute hosted at the University of California, Davis, in partnership with Power Africa and the Young African Leaders' Initiative. (Photos by Jennie Konsella-Norene, UC-Davis.)

The Gender Advisor also spoke on the panel on "Development Partners' Approach to Inclusive Infrastructure" at the Infrastructure Africa Conference. The presentation focused on Power Africa's approach and commitment to gender integration in the energy sector.

7. CHALLENGES & LESSONS LEARNED

This section sets forth the challenges faced by PATRP over the past 12 months, in conjunction with lessons learned during contract implementation.

7.1 CHALLENGES

7.1.1 PERSONNEL & LOGISTICAL CHALLENGES

As the Power Africa initiative expanded over the past year, PATRP worked quickly to adapt to the new levels of staffing required to support the program and achieve our goals. The rapid expansion invariably presented challenges in terms of recruiting new staff, deployment logistics, securing work permits and visas, and processing the corporate registration of Tetra Tech in four separate jurisdictions simultaneously. The expansion has required PATRP to ramp-up its footprint with a doubling of its long-term staff resident in Africa from 30 to over 70 in the space of less than six months, with a further 50 active short-term technical advisors and support staff.

7.1.2 TRANSITION FROM WORK ORDER SYSTEM TO CIP-BASED APPROACH

As reported earlier, in FY 2016 PATRP transitioned from a Work Order System to Country Implementation Plans, which promote a holistic programmatic approach to PATRP's objectives in each country. Initially, this shift gave rise to additional administrative burdens, particularly with respect to the re-allocation of billing codes to ongoing activities and the resulting challenges during invoicing. However, these challenges diminished with time.

7.1.3 DELAYS IN ACHIEVING RESULTS

On Objective 2 (Late-stage, Large-scale Transactions), PATRP encountered a number of political and technical risks during FY 2016, which caused us to fall short of our target MW to reach financial close. The reasons for this shortfall are summarized in Section 3 of this report, which should also be read in conjunction with Section 7.1.4 below (Challenges from the Field) and Section 8.

It should also be noted that PATRP's BTG work stream underwent a significant revamp in FY 2016 (to include new staffing), after a slow and disappointing start in FY 2015. As reported in Section 3, the new BTG team has deployed significant resources to the field. Now, armed with a clear strategy and focus, this team is well positioned to deliver new connections in FY 2017.

7.1.4 CHALLENGES FROM THE FIELD

Beyond what has already been discussed in this Report, PATRP advisors have reported the following challenges they face when implementing the objectives of this contract:

Djibouti. Since most of the current direct negotiations (for new generation) were not the result of a competitive tender process, the negotiations have been protracted, leaving many details open for negotiation. As always, having enough government counterparty bandwidth is difficult.

East Africa. The region is facing a potential oversupply situation in the next five years. This will shift focus away from closing deals on generation towards relieving transmission congestion and promote productive use of power, especially amongst large off-takers. The situation is particularly acute in Rwanda, which needs to focus on resolving transmission bottlenecks, and expanding regional interconnectors.

Ethiopia. The challenge so far has been that the Government wants to move quickly in developing new generation projects without robust vetting. There is also a lack of understanding on what the private sector expects to see in order to invest in infrastructure projects in Ethiopia, making it difficult to move forward with transactions without significant discussion and capacity building.

Ghana. Ghana's needs in terms of new generating capacity are progressively being covered, with several projects currently in the commissioning stage, accounting for more than a 50% increase in Ghana's generation capacity and more than its recorded deficit, hence creating a small reserve margin. This has triggered a reassessment of the amount of new generation that the Government is looking to contract in the short and near term.

Kenya. The challenges focus on the (i) Government of Kenya's reluctance to issue Letters of Support that typically protect project developers/sponsors from political events; (ii) transmission line issues, where KETRACO needs additional project management and contracting support in order to construct the transmission lines it has agreed to build for projects. On the transmission line issues, considering the delays in the completion of other transmission lines in Kenya, lenders increasingly are refusing to disburse funds without completion being guaranteed. KETRACO does not have the ability to provide a meaningful guarantee as its finances are dependent on funding from the Government; and (iii) the ability of developers to successfully navigate through community outreach requirements, and the inherent problems with acquiring land rights.

Nigeria. The Government has been slow in implementing reforms and effecting change. For example, it took 8 months for the new President to appoint ministers. In addition, the CBN has imposed restrictions on foreign currency lending and general access to FOREX, which appears to have adversely impacted energy sector investment.

Tanzania. The tariff determination that has been approved by the regulator for TANESCO over the next three years is not favorable, hence liquidity problems are likely to persist. The Ministry of Energy also appears to be in favor of keeping tariffs low. This may aggravate the existing challenges faced by IPPs with securing full payment of invoices for power delivered to TANESCO.

7.2 LESSONS LEARNED

7.2.1 NEED TO CONSTANTLY VERIFY AND REVIEW PATT CONTENTS

The addition of Portfolio Managers that consistently verify PATT data with Transaction Advisors and Relationship Managers has helped keep data as accurate as possible. The continued need to maintain the accuracy of the data and ensure they are current is done by proactive management, and now includes an M&E specialist working with Portfolio Managers in coordination with the transaction advisors in the field.

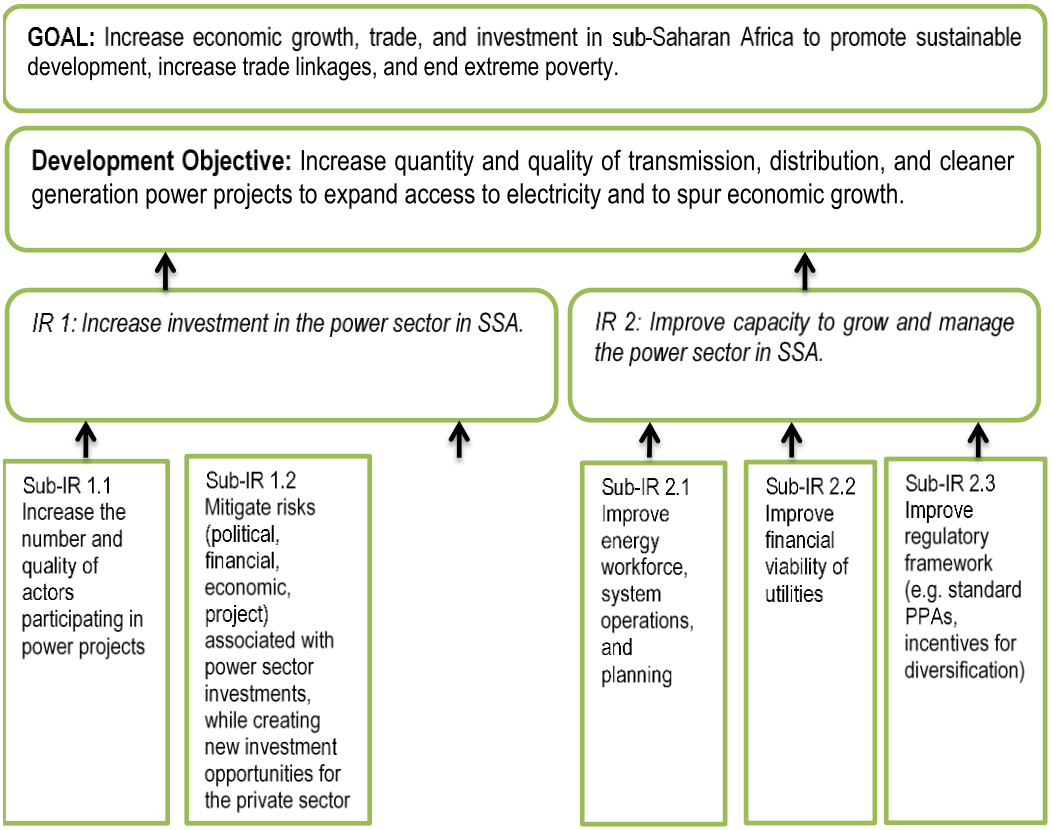
8. MONITORING AND EVALUATION

8.1 M&E FRAMEWORK

PATRP prepared a Performance Management Plan (PMP) to meet the requirements of Section C.6, Monitoring and Evaluation, of the contract. The PMP was originally submitted to USAID in July 2014, but was significantly revised in June 2015 and July 2016, and in each instance approved by USAID.

Monitoring and evaluation activities are based on the larger Power Africa Initiative Results Framework, which is graphically represented in Figure 8-1 and described in detail in the Power Africa Monitoring and Evaluation Plan. The Results Framework (RF) is a planning, communications and strategic management tool that conveys the development hypothesis implicit in the Development Objective (DO), illustrating the cause-and-effect linkages between outputs, IRs, and the DO to be achieved with the assistance provided. In the results framework for the DO, there is a set of related IRs and sub-IRs. In addition, sets of performance indicators are derived from the RF. The logic is that if the IRs are achieved, these results will contribute to accomplishing the higher-level DO and goal.

Figure 8-1: Power Africa Initiative Results Framework



The Power Africa goal represents the highest level of impact to which USAID, the partner country, civil society and other development partners contribute. The DO is the most ambitious result that a unit can materially affect and is willing to be held accountable for, along with USAID partners. Intermediate results are measurable lower-level changes that individually contribute to jointly achieve the DO, and sub-IR is changes that contribute to the IR, if the critical/key assumptions hold. PATRP's performance is tracked based on the DO and its related IRs, which in turn will be realized through sub-IRs achieved through the results-oriented activities of PATRP.

Each of the eight intermediate and sub-intermediate results has a total of 15 associated performance indicators against which data for PATRP activities are collected to measure progress and determine whether implementation is on track. The performance indicators each have a completed performance indicator reference sheet that includes descriptions, a plan for data collection, targets and baselines at the PATRP level. These were presented to USAID for approval in 2015, and were revised in July 2016.

8.2 PATRP RESULTS

The results-level indicators in the tables below refer to indicators of program results for FY 2016 that can be reasonably attributable to PATRP's efforts and for which PATRP can be held accountable. Generally, attribution exists when the causal linkages between program activities and the measured results are clear and significant. For PATRP, a result is attributable when the program can plausibly claim that without PATRP intervention, the result would not have occurred as it did. These indicators measure performance against the DO and IRs in the Results Framework and also serve as the basis for performance reporting to USAID. Summary-level, country- and regional-level results are detailed in the subsequent tables.

DETAILED BREAKDOWN OF PATRP RESULTS

Generation Capacity Pending Financial Closure; Unit MW

PATRP's original approved cumulative Target was 6,100 MW for generation capacity pending financial close. In first quarter FY 2016, PATRP received a request from USAID to provide an estimated increase in targets that would be linked to the increased number of Transaction and Technical Advisors in expanded countries and regions. The modification to the PATRP contract that incorporated this expansion was finalized in April 2016 and resulting Work Plan presented in July 2016; the expansion foresaw nearly a doubling of the Transaction and Technical Advisors deployed to the field and dedicated to increasing the number of transactions and MW under advancement to financial close. New transaction advisors and their deployments included: Malawi, (July 2016); Angola (October 2016); Nigeria Gas Advisor (May 2016); and Nigeria Lead Transaction Advisor (April 2016). There are three Transaction Advisor positions outstanding. As a result of the increase in Advisors, the PATRP cumulative target as of FY 2016 increased to 21,888 MW (2,100 FY 2015 and 19,788 FY 2016). Cumulative Results Achieved was 22,031 MW, an achievement of 1% above the cumulative target.

Table 8-1: Generation Capacity Pending Financial Closure

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17[15]
Generation Capacity Pending Financial Closure; Unit MW	6,100	26,324	21,888	22,031.52	101%	2,100	9,644.8	3,162	19,788	**12,386.7**	6,600

Comments on Results for FY 2016

Missed Targets: For FY 2016, the generation capacity pending financial close target fell short by 7,402 MW. There were three major (Nigeria – 4,400 MW; Tanzania – 1,405 MW; and Kenya – 644 MW) and two minor (Ethiopia – 556 MW and Senegal – 300 MW) markets that had an impact on the shortfall. A significant cause of the shortfalls include a slowing of investor confidence in some markets and governments facing an oversupply of power reducing the number of projects in the pipeline for the medium term. Examples include: A liquidity crisis in the Nigeria power sector due to insufficient revenues flowing through the electricity value chain, which prevents the market from reaching commercial efficiency; and the increased inflation and the Naira/Dollar exchange rate and the impact on contractors' original bid prices. In Kenya, there is a surplus capacity, which has led to reluctance by Government to issue Letters of Support that would support financial close which has a knock-on effect for new projects entering the pipeline. In addition, the public disclosures of the government on migrating to competitive procurement has led to a pause in project development as sponsors await clarification on timing and tariffs. For Tanzania, the shortfall is mostly due to the poor creditworthiness of the sole off-taker (TANESCO). The TA is reviewing the TANESCO pipeline for viable Power Africa projects, as well as seeking clarification on the legality of competitive procurement versus sole source negotiated contracting. The Government of Senegal's reluctance to provide sovereign guarantees, in addition to its preference for coal-fired power plants, led to investor attrition and less project activity.

[15] All FY 2017 Targets are estimated until the Fiscal Year 2017 Work Plan is approved by the COR.

Achievements: PATRP significantly increased its pipeline overall, but particularly for West Africa, adding over 5,000 MW of active hydropower transactions. The addition of a second West Africa Transaction Advisor increased proposed transactions under review to over 1,500 MW of gas projects.

Looking Forward to FY 2017

PATRP anticipates (i) additional transactions being identified in Angola with the deployment of the new Transaction Advisor; (ii) further advancement of projects through the pipeline with the addition of the AfDB Transaction Advisor; (iii) an increase of over 3,000 MW of existing generation assets from Niger Delta Power Holding Company due to improved gas supply contracts negotiated by PATRP TAs; and (iv) gas-to-power additions to the pipeline with private sector entities by the Gas Advisors in Nigeria, Côte d'Ivoire and Ghana. In Ethiopia, we are assisting the government in review and development of a pipeline of over 3,000 MW of critical generation projects for the next 10 years that includes various resources, including hydro, geothermal, biomass, solar, and wind energy.

Breakdown of Results per country/region – new transactions added in FY 2016

East Africa: 42.20 MW: Mayuge Sugar Bagasse, Nyabuhuka-Mujunju SHP, and Nyamabuye SHP were Pending Financial Close in FY 2016.
Djibouti: 50 MW: Grand Bara Phase 1 was Pending Financial Close in FY 2016.
Ethiopia: 3,600 MW: The following transactions were Pending Financial Close in FY 2016: Chemoga Yeda 1 & 2, Debre Birhan Wind Project, Geothermal Site 1, Iteya Wind Project, Metahara Solar Project, Solar Project 1, Solar Project 2, Tams Hydro Project and Thermal Biomass Project 1.
Kenya: 81 MW: The following transactions were Pending Financial Close in FY 2016: Tindinyo Falls Resort, Lamu Gas and Makindu Solar.
Tanzania: 1,645.124 MW: The following transactions were Pending Financial Close in FY 2016: Isigula Small Hydro Project, Nakatuta Small Hydro Project, Kusini Energy / Mtwara—Gas, Luganga Hydro, Kikuletwa I Hydropower Power Plant, Luswisi Hydropower Power Plant and Lupali Small Hydro Project.
Rwanda: 189 MW: The following transactions were Pending Financial Close in FY 2016: Kivuwatt Phase 2, LFO Rental Thermal Project, Rwanda Methane Plant, Ngali Energy projects, Rukarara VI, Bihongore, Karambo, Koko, Kore, Rucangozera, Agatobwe, Kabavu, Mpenge II and Kirimbi I, II & III.
Southern Africa: 167 MW: These numbers include Malawi (Salim, Blantyre, and Mbongozi), and Zambia (Ngonye and Bangweulu) projects for FY 2016 per structure of the Work Plan.
Liberia: 121.5 MW: The following transactions were Pending Financial Close in FY 2016: Port Buchanan, Buchanan and Du River.
Nigeria: 600 MW: The following transactions were Pending Financial Close in FY 2016: Middle Band Solar, Nova Scotia, Magboro IPP, Ewekoro Phase I & II and Panyam Solar.
West Africa: 5,891 MW: These numbers include Côte d'Ivoire, Guinea, Senegal, Benin, Mali, Sierra Leone, Mauritania and Burkina Faso projects for FY 2016.This indicator contains a large number of hydropower projects that will be further refined and assessed for viability and advancement in early FY 2017.

Generation Capacity Reached Financial Closure; Unit MW

For the original contract (i.e. through May 2017), PATRP's approved cumulative Target was 2,650 MW for generation capacity reached financial close. As a result of the PATRP expansion, the cumulative target as of FY 2016 was 2,097 MW (525 FY 2015 and 1,572 FY 2016). Cumulative Results Achieved was 1,572.5 MW, an achievement of 75% of the cumulative target.

Table 8-2: Generation Capacity Reached Financial Closure

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Generation Capacity Reached Financial Closure; Unit MW	2,650	4,406.5	2,097	1,572.5	75%	525	667.5	426	1,572	**905**	2,443

Comments for Actual FY16

Missed Targets: For FY 2016, the Generation Capacity Reached Financial Closure target fell short by 524.5 MW. The two countries that fell short were Nigeria (1,400 MW) and Ghana (144 MW). A significant cause of the shortfall for Ghana was the oversupply of power, which resulted in the Government initiating a more selective approval process and migration away from a Government Consent & Support Agreement (GCSA) to the Put & Call Option Agreement (PCOA). This shift to a new guarantee product took time to complete negotiations with Early Power (144 MW) and receive parliamentary approval. In addition, the power sector is facing severe liquidity constraints driving project developers to seek credit support under Work Bank Partial Risk Guarantees (PRG), and Development Credit Authority (DCA). For Nigeria, 11 front-runner solar IPPs were expected to close in FY 2016, but negotiations of PCOA terms, delay in clarification of NERC requirement for competitive procurement, concerns over high tariffs, as well as the liquidity crisis all led to a significant delay in reaching financial close.

Achievements: PATRP reached financial close on four projects: Nigeria (Azura 450 MW), Tanzania (Kinyerezi I Expansion 186 MW, Kinyerezi II 240 MW), and Senegal (Senergy 29 MW). For the Kinyerezi projects, PATRP provided assistance on feasibility review and Board Memorandum, which led to approval of the transactions. In Senegal, PATRP provided support on negotiations of project agreements with the Government of Senegal and the project sponsors. On Azura, PATRP provided support on the PCOA, PPA, and tariff negotiations through NBET.

Looking Forward to FY 2017

In FY 2017 PATRP anticipates reaching financial close for over 1,400 MW in Nigeria, 144 MW in Ghana, 340 MW in Tanzania, 240 MW in Kenya, 70 MW in Malawi and 120 MW in Ethiopia. The Government of Ethiopia has agreed in principle to grandfather the Corbetti project with only one condition remaining under negotiations, which is expected to be finalized and approved by Parliament by the end of March 2017. For the solar and gas IPPs in Nigeria, we are finalizing negotiations on the PCOA form that will allow stronger bankability. A number of projects already have financial partners and await final guarantees (PCOA and MIGA) to proceed to financial close.

Details of Results per country/region – transactions reaching financial close in FY 2016

Tanzania: 426 MW: Kinyerezi I Expansion and Kinyerezi II Reached Financial Close in FY 2016.

Nigeria: 450 MW: Azura Reached Financial Close.

West Africa: 29 MW: Senergy reached financial close.

Generation Capacity Commissioned; Unit MW

PATRP's original approved cumulative Target was 916 MW for generation capacity commissioned. The PATRP expansion Work Plan was finalized in July 2016 without a target for commissioned projects. Cumulative Results Achieved was 5 MW above 0 target.

Table 8-3: Generation Capacity Commissioned

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Generation Capacity Commissioned; Unit MW	916	660	0	5	N/A	0	0	0	0	**5**	536

Comments on Results for FY 2016

Missed Targets: For FY 2016, there were no targets for generation capacity commissioned.

Achievements: PATRP engaged significantly and regularly with REA and TANESCO to ensure the transmission line required for evacuation of power from Tulila Hydro's first two turbines would be built in time for scheduled commissioning. In addition, the PATRP TA assisted in the financial agreement that allows for a total of 7.5 MW to be commissioned once a second transmission line is constructed near the project site.

Looking Forward to FY 2017

PATRP anticipates commissioning of 536 MW of projects in FY 2017 to include Kinyerezi I Expansion (186 MW) and Cenpower (350 MW). Both projects are on schedule for commissioning in FY 2017.

Details of Results FY16

Tanzania 5 MW: Tulila hydro was commissioned in FY 2016.

Table 8-4: Number of new grid and off-grid projected direct connections

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Number of new grid and off-grid projected direct connections; Unit #	300	1,200,000	300	0	N/A	0	0	0	300	**0**	600,000

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP missed 300 off-grid connections. The Tanzania Rural Energy Agency (REA) TA will assist micro-grid developers to increase connections in FY 2017. Most isolated grids in Tanzania are owned by TANESCO and run diesel generation, therefore micro-grid developers are adding renewables to the mix with limited focus on connections. In addition, the policy for green mini-grids model is not currently bankable and the TA is assisting REA to update the policy. Beyond this, there is a recognition that PATRP's BTG program experienced a slow start in FY 2015, but the last 12 months witnessed a significant ramp-up in activities and personnel, with a renewed focus on contributing towards Power Africa's new connections goal under Pillar 2 of the Roadmap. A new SSRE advisor joined the team in January 2016, along with new BTG advisors for Kenya, Nigeria, Rwanda, Uganda, and the East Africa and West Africa Regions – a total of 10 advisors working in 11 countries. These efforts are expected to elicit tangible results in FY 2017, with 300,000-targeted new connections.

Achievements: In Tanzania, PATRP is assisting a number of donor-led programs that will lead to almost 250,000 new projected connections over the life of the program.

Looking Forward to FY 2017

In Tanzania, PATRP anticipates over 300 off-grid projected connections in FY 2017. In addition, PATRP is assisting REA with a number of donor-led programs that may lead (in the near term) to almost 250,000 new projected connections. Elsewhere, and as mentioned above, the BTG team expects to deliver 300,000 new projected connections in FY 2017; with PATRP's support to the DISCOs in Nigeria eliciting 300,000 new on-grid projected connections.

Utilization of Risk Mitigation Measures; Unit #

PATRP's original approved cumulative Target was 12 Mitigation Tools. The PATRP Work Plan finalized in July 2016 included a target of 5 Risk Mitigation Measures. As a result, the PATRP cumulative target as of FY 2016 increased to 7 Tools (2 tools FY 2015 and 5 tools FY 2016). Cumulative Results Achieved was 8 tools. Moving forward, this indicator will be tracked and reported by PATRP, but it will not have an associated target. This indicator provides contextual assessment of the country or regional pipeline and aids in the analysis of the power sector health by providing an indication of the level of confidence investors have in a country by gauging the requirements for guarantees and other risk mitigation tools and measures.

Table 8-5: Utilization of Risk Mitigation Measures

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Utilization of Risk Mitigation Measures; Unit #	12	5	7	8	114%	2	4	1	5	**4**	0

Comments on Results for FY 2016

Missed Targets: For FY 2016 no risk mitigation tools were required for two of the four projects that reached financial close, therefore PATRP did not meet target.

Achievements: PATRP has been instrumental in developing and negotiating risk mitigation measures, including the PCOAs for Nigeria and Ghana covering renewables and gas projects; and providing comments to create a bankable Government Letter of Support in Kenya. Both of these tools provide investors comfort in financing power projects with non-creditworthy off-takers.

Looking Forward to FY 2017

PATRP anticipates continued use of these tools and creation of other incentives using DCA, Blended Financing, exchange rate fluctuation risk tools and others that will facilitate transactions reaching financial close.

Details for Actual FY16

Nigeria: Three: Azura used Political Risk, Partial Risk Guarantees, and PCOA.

West Africa: 1: Senergy used Political Risk.

Training and Capacity Building Activities; Unit: Number of Person Hours Trained

PATRP's original approved cumulative Target was 9,440 person hours trained. The PATRP Work Plan was finalized in July 2016 with 4,092 person hours trained. Cumulative Results Achieved was 9,710 person hours trained. An achievement of 237% above the cumulative target.

Table 8-6: Training and Capacity Building Activities

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Training and Capacity Building Activities; Unit: Number of Person Hours Trained	9,440	9,364.0	4,092	9,710.5	237%	480	2,275.0	3,492.0	3,612	**7,435.5**	2,740

Comments on Results for FY 2016

Achievements: PATRP significantly increased training to 7,435 person hours. Training included PCOA workshops for Ministries of Finance and Power, PPA workshops for government negotiators and training for distribution employees at all levels of management. These provide a direct linkage to additional MW reaching financial close as Ministries of Finance better understand the guarantee product and have comfort that it does not interfere with IMF or other donor requirements. Training of distribution workers led to direct increase in revenue for distribution companies and improved billing for customers.

Looking Forward to FY 2017

PATRP anticipates training for PPA negotiations and PCOA development in additional countries. In Ghana, we anticipate further training on the Revenue Waterfall model that will help the Government improve payments within the power sector and better manage revenue accounts. In Djibouti, training on geothermal drilling regulations, competitive procurement toolkit templates and small-scale production projects will assist in moving deals through the project cycle through greater transparency and bankable deal documents. In Tanzania, TANESCO will be trained on financial modelling of power projects to expedite the treatment of IPPs.

Details for Actual FY16

Ethiopia: 180 person hours: PATRP Ethiopia team conducted the following training and capacity building activities – (i) Solar RFP package evaluation workshop; and, (ii) Technical review working group meeting.

Kenya: 291 person hours: In FY 2016, PATRP team in Kenya conducted the following training and capacity building activities: (i) KP solar PV study tour in South Africa; and, (ii) PPA Workshop.

Tanzania: 1,453 person hours: In FY 2016, PATRP team in Tanzania conducted the following training and capacity building activities:

- Workshop on Performance Appraisal for Electric Utilities;
- Strategic Workforce Planning for Electric Utilities;
- Managing Teams and Internal Communications;

- Forecast Model for the TANESCO TSO Function;
- Electric Balances Workshop;
- Accounting for a Line of Business;
- Budgeting and Financial Forecasting;
- TSO Financial Model - on-job training;
- Power System Studies and Analysis;
- On-job training on PSS/E Load Flow model to run Power System Analysis;
- Workshop of TSO Structure;
- Workshop on TSO Business Plan for Transmission Management;
- Workshop on TSO Business Plan for TANESCO Management and USAID;
- Training/Workshop on TANESCO System PSS/E Load Flow Modelling; and
- On-Job training for TANESCO Safety function on Safety principles and approaches.

Rwanda: 747 person hours: The PATRP TA conducted capacity building on PPA development for micro-hydro power projects and capacity building for EDCL staff/lawyers.

Southern Africa: 75 person hours: PATRP team conducted training on gender.

Ghana: 2,824 person hours: The PATRP team in Ghana conducted the following training and capacity building activities in FY 2016.

- LNG training workshop and
- PPA training workshop.

Nigeria: 1,865.50 person hours: PATRP team in Nigeria conducted the following training and capacity building activities in FY 2016:

- Operational Activities in the field;
- PPA/PCOA Training;
- Training of Field Enforcement Officers and teams;
- Cash Drive;
- Detection of Losses;
- New Disconnection process planning and approach;
- Customer Enumeration Importance;
- Commercial Processes and Revenue management;
- Revenue protection;
- Disconnection and Bill Delivery importance for utility business;
- New approach on Disconnection;
- Revenue management and Commercial Processes; and
- New reading approach.

Greenhouse Gas Emissions Reduced; Unit Metric tons CO_2e

PATRP's original approved cumulative Target was 34,715 tCO_{2e} for GHG reduction. Total targets are now 6,581 tCO2e. However, this indicator is counted only at project commissioning and does not have associated targets due to variables required to calculate the figure such as technology type and number of MWs. PATRP will track and report results on this number without targets.

Table 8-7: Greenhouse Gas Emissions Reduced

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14- Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Greenhouse Gas Emissions Reduced; Unit Metric tons CO_2e	34,715	0	6,581	10,661	162%	6,581	0	0	0	**10,661**	0

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not have targets for GHG reduction.

Achievements: PATRP supported commissioning of a 5 MW hydro plant, which provided 10,661 tCO2e in GHG reduction per year.

Looking Forward to FY 2017

PATRP anticipates additional reductions of 403,781 tCO2e (Kinyerezi I Expansion) and 126,662 tCO2e (Cenpower) per annum due to these projects being commissioned.

Details for Actual FY16

Tanzania: 10,661. This figure is for 5 MW for Tulila hydro that was commissioned in FY 2016.

Aggregate Losses

PATRP's original aggregate losses targets were 10%, but were revised to 7% for all distribution company pilot areas in FCT South Region in Abuja, Lagos (Apapa and Mushin), and Benin (Evbuotubu, Ikpoba-Hill and Ugbowo). Although there were targets for FY 2015, PATRP did not have a mandate to begin work with distribution companies until the terms of the expansion were agreed in April 2016.

Table 8-8: Aggregate Losses

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Aggregate Losses-Abuja	10%	7%	7.5%	13%	173.3%	5%	0	13%	7.5%	**13%**	7%
Aggregate Losses-Eko Lagos	10%	6%	7.0%	12%	171.4%	5%	0	12%	4.5%	**12%**	7%
Aggregate Losses-Benin	10%	7%	7.5%	7%	93.3%	5%	0	7%	7.5%	**7%**	7%

Comments on Results for FY 2016

Missed Targets: At BEDC, PATRP supports business units with over 136,000 customers, or about 18% of the total reported BEDC customer base. PATRP missed the BEDC target by 0.5% due to hindrance of DISCO staff from disconnections and harassment and threats. PATRP subsequently engaged community members who eventually agreed to allow the DISCO staff to work unhindered. We expect the loss-reduction activities to improve this number in FY 2017.

Achievements: PATRP was assigned some of the most difficult areas to work by the distribution entities as pilot areas. These included the Federal Capital Territory (FCT) South Region in Abuja, Lagos (Apapa and Mushin), and Benin (Evbuotubu, Ikpoba-Hill and Ugbowo). Within a four-month period, PATRP demonstrated that operational and technical improvements can reduce losses and improve revenue and collection rates. At AEDC, PATRP focused on the FCT South region, which has 141,000 customers, or about 18% of the total reported AEDC customer base. Here, PATRP exceeded targets by 173%. Finally, at EKEDC, PATRP is focused on two districts that contain 127,000 customers, representing approximately 30% of EKEDC's base. Here, PATRP exceeded targets in pilot areas by 171%. Engaging with law enforcement and communities showed tangible results. To that end, this proven activity led directly to PATRP-led assistance being requested for the entire FCT area of Abuja, the entire EKEDC territory in Lagos area and the entire territory area in Edo State for BEDC.

Looking Forward to FY 2017

PATRP continues to demonstrate a direct link between better governance and management, improved loss reduction and revenue increase. In the larger rollout of these activities in FY 2017, we expect to see continued performance improvements (subject to receiving cooperation from counterparts):

Abuja ATC&C Loss Pilot Area: May 2016 – 54%; June-October 2016 – 37%
Eko ATC&C Loss Pilot Area: May 2016 – 43%; June-October 2016 – 33%
Benin ATC&C Loss Pilot Area: May 2016 – 62%; June-October 2016 – 54%

Details for Actual FY16

Aggregate Losses-Abuja – for the pilot area, loss reduction was better than projected, with losses down 13%.
Aggregate Losses-Eko Lagos – for the pilot areas, loss reduction was better than projected, with losses down 12%.
Aggregate Losses-Benin – for the pilot areas, loss reduction was slightly off target, with losses down 7%.

Policy; Unit # (Actions)

PATRP's original approved cumulative and FY 2016 Target was 15 policies drafted. PATRP exceeded this target by 294% with 43 policies drafted.

Table 8-9: Policy Actions

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Policy; Unit # (Actions)	15	52	18	53	294%	3	10	22	15	**43**	21

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not miss targets for policies drafted.

Achievements: For FY 2016, PATRP exceeded requirements in policies drafted by 294% across Power Africa countries and regions. Specific achievements include the PPA and PCOA form drafted for both solar and gas transactions in Nigeria that will lead to improved bankability and transparency in the sector; Implementing Regulations for a Power Production Law, which will clarify how the private sector participates in the sector (for Djibouti); assistance in developing the Geothermal Proclamation in Ethiopia, which is expected to transform the sector and significantly increase new private sector investors; a Template Gas Purchase Agreement in Ghana that will add further transparency to the sector; and others.

Looking Forward to FY 2017

PATRP will focus on ensuring the adoption of key policy deliverables drafted over the past three years in FY 2017 having recognized early on that for investors to participate competitively and ensure low cost power there must be transparency in the market and transactions must be bankable. We will continue to draft policies and regulations that will advance, secure and sustain the efforts of Power Africa to date including completing draft of Guidelines and Establishment Documents for the Regulatory Services Department in Djibouti; Operational Planning and Dispatch Procedures for EUCL in Rwanda; and the Generation Masterplan in Senegal.

Details for Actual FY16

East Africa: One: EAPP Interconnection Code Compliance Program.

Djibouti: Four: Policy reform documents developed include:

- Design and develop the licensing and concessioning process;
- Implementing Regulations for Power Production Law;
- Small-Scale Energy Production & Sale – License Documents; and
- Development of Net-metering Principles and incorporation in implementing regulations.

Ethiopia: Three: PATRP Ethiopia team developed a number of policy documents including:

- Geothermal Proclamation;
- Energy Proclamation Amendment; and
- Regulation for Energy Operations.

Kenya: Two: Policy reform actions include:

- Grid Codes; and
- Kenya Power Accession Agreement.

Ghana: Twelve: Policy reform actions include:

- Financial Models to Calculate Gas Processing Cost and Gas Transportation Cost in Offshore Gas Gathering Line and Onshore Atuabo-Aboadze Pipeline Systems;
- Template Gas Purchase Agreement between Petroleum Agreement Contractor as 'Seller' And Ghana National Petroleum Corporation as 'Buyer';
- Advisory Briefing Paper Updated Ghana Gas Market Review (Final Report);
- Gas Act 2016;
- Ghana Electricity Demand Forecast and Suppressed Demand Estimation Study;
- LNG Policy Paper;
- Assessment of VRA Thermal Plants & Rehabilitation (Volume I);
- O&M Performance Contract Competitive Bidding (Volume II);
- Other VRA Core Activity Contracts (Volume III);
- Gas Master Plan;
- Generation Capacity Expansion model to all sector entities including VRA, ECG, MOP, MOPET and MOF; and
- Operations License for Ghana Gas Company.

Nigeria: 21: Policy reform actions include:

- TCN procurement documents;
- Credit enhancements for TCN projects;
- TCN ownership doc;
- NBET PPA form Solar;
- Paper in Support of TCN Board Approval of Optimization of Approval Limits for Transmission Services Provider Business Unit;
- Procedure for detection and prevention of energy theft cases;
- Loss Reduction Targets - Executive Order;
- Energy theft penal proceeding;
- Database Cleaning Procedure;
- Sketching of Low Voltage Network 0.4kV;
- Procedure on the numbering of poles, junction boxes, customer connection boxes, meter boxes and cross over connection of the LVN (Low Voltage Network 0.4kV);
- Executive Order for Network Sketching;
- The maintenance and safety of transformers -Executive Order;
- Disconnection Guidelines-Executive Order;
- Order on procedures of making changes to the organizational structure;
- Action Plan for AEDC Legal Office;
- Legal processes to issues criminal and civil cases;
- Instructions guide in properly completing Electricity Inspection Reports by theft control teams;
- Template of Criminal Report; and,
- Job description for regional lawyers.

Policy; Unit # (Implemented)

PATRP's original approved cumulative Target was four policies implemented, but targets were not assigned for FY 2016.

Table 8-10: Policy Implementation

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Policy; Unit # (Implemented)	4	14	0	16		0	0	11	0	**16**	10

Comments on Results for FY 2016

Missed Targets: There were no targets set for policies implemented in FY 2016.

Achievements: PATRP completed the implementation of 16 policies and regulations that will lead to good governance of the sector. PATRP significantly improved the operations and management of the pilot areas in the distribution entities through intensive training in company policies and procedures that have shown a direct result in improved revenue (over 1.4 billion Naira) and loss reduction that has averaged 11%. The EAPP Interconnection Code Compliance Program will allow future regional power trading, which will be transformative in securing competitively priced power in the East Africa region.

Looking Forward to FY 2017

PATRP anticipates a further target of ten policies and procedures that will be adopted to improve system governance, which will include a Gas Act in Ghana, finalizing the Gas form PCOA to create transparency and bankability in the Nigeria gas sector, and Integrated Resource Plan and Implementing Strategy in Djibouti, to name a few.

Details for Actual FY16

Nigeria: 15: The DISCO team has had a number of successful Policy actions that were implemented in each business area approved to be rolled out DISCO-wide. Policy reform actions implemented include:

- TCN procurement documents;
- Credit enhancements for TCN projects;
- TCN ownership doc;
- Energy theft penal proceeding;
- The maintenance and safety of Transformers-Executive Order;
- Disconnection Guidelines-Executive Order;
- 5-day Reading Cycle; and,
- Bill delivery process after Billing Period is closed.

East Africa: One: EAPP Interconnection Code Compliance Program.

Kilometers of Power Lines Pending Financial Close; Unit KM

PATRP did not have original targets for this indicator and it was added at the request of USAID Nigeria. Moving forward, this indicator will focus on PATRP evacuation of generation assets in the pipeline that will otherwise be stranded without this assistance. In addition, it assists in minimizing the number of scheduled and non-scheduled outages that lead to system failure.

Table 8-11: Kilometers of Power Lines Pending Financial Close

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Kilometers of Power Lines pending financial close; Unit KM		12,080	10,080	3,009	30%	0	0	3,009	10,080	**3,009**	0

Comments on Results for FY 2016

Missed Targets: For FY 2016, the active Kilometers of Power Lines Pending Financial Close target fell short by 7,071 km. The major reason this indicator fell short is the inconsistent assistance across the East Africa region on transmission advancement. PATRP has a large portfolio of proposed transmission projects that require assistance, but this has been pared down to NELSAP-focused projects. PATRP will upgrade these projects after review.

Achievements: PATRP's inclusion of the West Africa transmission lines will ensure eventual regional and/or bilateral power trade is facilitated, especially for the large number of hydro projects in the pipeline.

Looking Forward to FY 2017

PATRP anticipates a significant increase in this result once the East Africa NELSAP projects are added to the pipeline.

Details for Actual FY16

West Africa

3,009: The kilometers of power lines are for OMVS Manantali II (1,300); and OMVG (1,708).

Kilometers of Power Lines Reached Financial Close; Unit KM

PATRP did not have original targets for this indicator and it was added at the request of USAID Nigeria. This indicator will focus on PATRP evacuation of generation assets in the pipeline that will otherwise be stranded without this assistance. In addition, it assists in minimizing the number of scheduled and non-scheduled outages that lead to system failure.

Table 8-12: Kilometers of Power Lines Reached Financial Close

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Kilometers of Power Lines Reached Financial Close; Unit KM		526	263	579	220%	0	0	579	263	**579**	263

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not miss targets related to kilometers of Power Lines Reached Financial Close.

Achievements: PATRP exceeded targets by over 220%. Specifically, PATRP increased the number of kilometers of pipeline which allowed for the evacuation of power from otherwise stranded generation assets and minimized the number of scheduled and non-scheduled outages which lead to system failure, and increased the wheeling capacity of TCN by completing construction of 143 km of line where 211 MW of stranded generation assets was evacuated.

Looking Forward to FY 2017

PATRP's focus in FY 2017 is to ensure generation capacity projects assisted by PATRP in Nigeria are also provided assistance for construction of lines required for evacuation of power (through TCN). It is important to note that once the supply of gas throughout the sector is improved and existing generation operates at full capacity, the transmission system bottlenecks will become the major obstacle to sector sustainability. At present, TCN can only wheel approximately 5,300 MW, and if PATRP's FY 2017 target of approximately 2,500 MW of generation assets were to come online over the next four years, the transmission system will not be capable of wheeling these projects at peak, which does not include increase performance of existing generation.

Comments for Actual FY16

Nigeria: 143 km: Second Benin Onitsha line was funded by 2nd Tranche AfDB facility and project was complete;
Kenya: 436 km: Lake Turkana transmission was not counted until now.

Transmission Projects Pending Financial Close; Unit #

PATRP will no longer provide targets for this indicator but will track and report results. This will be used as a measure of overall power sector health and pipeline advancement of projects through financial close.

Table 8-13: Transmission Projects Pending Financial Close

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Transmission Projects Pending Financial Close; Unit #		14	14	13	93%	0		13	14	**13**	0

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP missed by one unit the number of Transmission Projects Pending Financial Close.

Achievements: In Nigeria, PATRP assisted TCN priority transmission projects linked to the large number of generation assets under construction. PATRP was successful in moving one of these projects through financing and construction using an existing loan program from the AfDB.

Looking Forward to FY 2017

PATRP's focus in FY 2017 is to ensure generation capacity assisted by PATRP are also provided assistance on construction of lines required for evacuation of power.

Details for Actual FY16

Nigeria: Ten: The following transmission projects were Pending Financial Close in FY 2016 (note – owing to changing priorities, PATRP support is likely to shift away from these TCN projects in FY 2017):

- Kaduna-Jos 330 kV Double Circuit Transmission Line;
- Transformers at Akure;
  Transmission Line Extension-Kaduna, Jos, & Onitsha;
- FGN Funded Transmission Rehabilitation Transactions;
- Transaction Support to TCN for Ongoing EPC Contracts;
- Additional Transformer Capacity at Olorunsogo;
- Additional Transformer Capacity at Omotosho;
- Erukan-Omotosho 330 kV Double Circuit Transmission Line;
- Benin North-Oshogbo 330 kV Double Circuit Transmission Line; and
- 2nd Benin-Onitsha 330 kV Single Circuit Transmission Line

West Africa: Three: The following transmission projects were Pending Financial Close in FY 2016:

- Mali - OMVS Manantali; and,
- Benin - WAPP Interconnect and OMVG

Transmission Projects Reached Financial Close; Unit #

PATRP will no longer provide targets for this indicator but will track and report results. This will be used as a measure of overall power sector health and pipeline advancement of projects through financial close.

Table 8-14: Transmission Projects Reached Financial Close

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Transmission Projects Reached Financial Close; Unit #		2	2	2	100%	0		2	2	**2**	0

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not miss targets for Transmission Projects Reached Financial Close.

Achievements: In Nigeria, PATRP increased the wheeling capacity of TCN by completing construction of 143 km of line where 211 MW of stranded generation assets was evacuated.

Looking Forward to FY 2017:

As stated above, our focus in FY 2017 is to ensure generation capacity assisted by PATRP are also provided assistance on construction of lines required for evacuation of power.

Details for Actual FY16

Nigeria: One: Second Benin Onitsha line was funded by 2nd Tranche AfDB facility and project was completed.

Kenya: One: Lake Turkana transmission line was part of the original transaction but this result was not previously counted

Improved Revenue at Distribution Companies; # of Regularized Customers

PATRP's original approved cumulative target did not include Regularized Customers, however this was added as a customized indicator at the request of the PATRP Nigeria distribution team and with concurrence from USAID/Nigeria.

Table 8-15: Improved Revenue at Distribution Companies

Indicator Name	Total Approved (July 2015) Targets 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Improved Revenue at Distribution Companies; # of Regularized Customers		0	0	35,000				35,000		**35,000**	35,000

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not have targets for Customer Regularization.

Achievements: In Nigeria, PATRP increased by 17,500 the number of new customers identified by distribution entities that were previously unregistered and not paying for electricity consumption. In parallel, they identified an additional 17,500 customers that were not being billed. This improved revenue management has led to PATRP's expanded footprint within the distribution companies.

Looking Forward to FY 2017

In Nigeria, PATRP anticipates that a significant number of new customers will be identified for billing and collection.

Details for Actual FY16

Nigeria: The DISCO team regularized 17,500 new customers and regularized an additional 17,500 customers that were connected but not in the billing system.

Additional Revenue Generated at DISCOs due to Regularization of Existing Consumers; Unit: Millions of Naira

PATRP did not have original approved cumulative Target for Revenue Generation. This was added at the request of the PATRP Nigeria distribution team and concurrence by USAID/Nigeria with FY 2017 target of 209.1 million Naira.

Table 8-16: Additional Revenue Generated at DISCOs

Indicator Name	Total Approved (July 2015) Targets, 3 Base Years (May/14 - May/17)	Expansion Targets (FY16 and FY17)	Total Targets Base Years & Expansion (May/14 - Sept/16)	Cumulative Actual (May/14 - Sept/16)	% Actual vs Target (May/14 – Sep/16)	Target FY15	Actual FY15 (May/14 - Sept/15)	Q4 FY16 Total	Target FY16	Actual FY16	Estimated Target FY17
Additional Revenue Generated at DISCOs due to Regularization of Existing Consumers; Unit: Millions of Naira		209,101,000	0	289,000,000				289,000,000	0	**289,000,000**	209,101,000

Comments on Results for FY 2016

Missed Targets: For FY 2016, PATRP did not miss targets for Revenue Generation.

Achievements: In just four months, PATRP demonstrated a direct link between better governance and management and revenue improvement increasing the distribution companies' revenue base by 289 million Naira in the pilot areas. This proven activity led directly to PATRP assistance being requested for the entire Federal Capital Territory of Abuja, the entire EKEDC territory in Lagos area and the entire territory area in Edo State for BEDC.

Looking Forward to FY 2017

PATRP anticipates additional revenue generation from improved distribution system management. To this end, PATRP will work with the DISCOs on improving cash flow through the energy value chain; this will be part of PATRP's efforts to address the liquidity challenges facing the sector.

Details for Actual FY16

Nigeria: Collections for all three DISCOs based on our efforts amounts to 1.5 billion naira for four months.

Table 8-17: Djibouti Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	210	100	50	0	110	50	100	Projects assisted include Grand Bara (50 MW), Beazley and the BRG pipeline. For Grand Bara, the Solar Implementation Agreement was signed, but the developer failed to get signature on a Power Purchase Agreement from the off-taker. The North Ghoubet wind project (60 MW) may be included as part of a competitive tender as it is stalled due to clarification of agency authority over bilateral donor funds. The transaction is still under review and may be added in FY 2017.
Transactions Pending Financial Closure; Unit #	2	2	1	0	2	1	0	This indicator is directly linked to the indicator that shows MW Pending Financial Close above.
Training and Capacity Building Activities; Unit: Number of person hours trained	200	435	435	0	100	0	100	The TA and other Technical Advisors completed over 100 hours of training and capacity building, but mostly in the form of coaching, and not structured as formal events as the focus has been developing the capacity of senior officials at MERN, including the Minister. Moving forward in 2017, we will conduct more structured workshops that will ensure verification of training and provide capacity development of technical deliverables.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Policy; Unit # (Actions)	6	4	0	2	3	4	3	Power Africa had made some progress on reforms of the Electricity Supply Industry (ESI) however, recent changes in key MERN staff means the team will need to discuss ESI reform issues and develop relationships with new appointments. Select reform documents developed include: ▪ Design and develop the licensing and concessioning process. ▪ Implementing Regulations for Power Production Law ▪ Small-Scale Energy Production & Sale - License Documents ▪ Development of Net-metering Principles and incorporation in Implementing regulations
Policy; Unit # (implemented)	1	0	0	0	0	0	1	PATRP expects the IRP to be adopted in FY 2017.

Table 8-18: Ethiopia Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	5,156	4,570	970	0	4,156	3,600	1,000	PATRP is assisting the Ethiopian government in developing the standard documents for two projects Metahara (100 MW and Chemoga Yeda 280 MW). In addition, while reviewing the five-year plan's pipeline we downgraded a number of expected MW leading to a reduction in our initial estimates. In 2017 we are reviewing over 2,000 MW for PATRP assistance.
Transactions Pending Financial Closure; Unit #	13	14	5	0	13	9	0	This indicator is directly linked to the indicator that shows MW Pending Financial Close above.
Generation Capacity Reached Financial Closure; Unit MW	120	0	0	0	0	0	120	Corbetti 20 MW and Metahara are expected to reach financial close in FY 2017 due to efforts of the TA in working with GoE and the legal team of the sponsors to grandfather the Corbetti transaction against the Geothermal Proclamation.
Training and Capacity Building Activities; Unit: Number of person hours trained	300	724	544	180	100	180	200	PATRP provided training on solar RFP package workshop as part of the Metahara project. This will lead directly to increased IPP and competitive bidding.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Aggregate Losses	0%	0%	0%	0%		0%	TBD	Once PATRP has completed the assessment of the utility (EEU) and the prospects for loss reduction, we will provide FY 2017 targets.
Policy; Unit # (Actions)	10	4	1	2	2	3	8	PATRP Ethiopia team developed a number of policy documents including: ▪ Geothermal Proclamation ▪ Energy Proclamation Amendment ▪ Regulation for Energy Operations

Table 8-19: Ghana Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	250	2,030	2,030	0	250	0	0	Ghana's peak power system load is around 2,200 MW. A number of public sector power projects totaling nearly 1,000 MW are under construction, removing the urgency for new IPPs to be provided the required GoG consents and approvals. This will significantly slow new projects from entering the pipeline in the short to medium term.
Transactions Pending Financial Closure; Unit #	6	7	7	0	6	0	0	This indicator is directly linked to the indicator that shows MW Pending Financial Close above.
Generation Capacity Reached Financial Closure; Unit MW	144	350	350	0	144	0	0	Financing of new IPP Transactions slowed in FY 2016 due to an oversupply of IPPs in the pipeline. As a result, the GoG initiated a more selective approval process and moved away from a Government Consent & Support Agreement (GCSA) to a Put & Call Options Agreement (PCOA). This shift to a new guarantee product took time to complete negotiations and receive parliamentary approval. In addition, the Power sector is facing severe liquidity constraints driving project developers to seek credit support under Work Bank Partial Risk Guarantees (PRG), which was delayed due to GoG review of the country's power requirements.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Transactions Reached Financial Closure; Unit #	1	1	1	0	1	0	0	This indicator is directly linked to the indicator that shows MW Reached Financial Close above.
Generation commissioned	350	0	0	0	0	0	350	Kpone Cenpower is expected to complete construction in FY 2017.
Training and Capacity Building Activities; Unit: Number of person hours trained	1,064	3,728	904	1,424	200	2,824	864	PATRP advisors provided significant training on policies and tools developed for the gas sector, including LNG workshop and PPA training workshop.
Policy; Unit # (Actions)	6	16	4	0	4	12	2	Select policies drafted include: ▪ Financial Models to Calculate Gas Processing Cost and Gas Transportation Cost in Offshore Gas Gathering Line and Onshore Atuabo-Aboadze Pipeline Systems ▪ Template Gas Purchase Agreement between Petroleum Agreement Contractor as 'Seller' And Ghana National Petroleum Corporation as 'Buyer' ▪ Advisory Briefing Paper Updated Ghana Gas Market Review (Final Report) ▪ Gas Act 2016 ▪ Ghana Electricity Demand Forecast and Suppressed Demand Estimation Study

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Policy; Unit # (implemented)	0	0	0	0	0	0	0	N/A
Transactions that improve Gas availability; Unit MMscfd	160	0	0	0	0	0	160	PATRP will assist existing generation to increase gas supply and improve efficiency.

Table 8-20: Kenya Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Number of new grid and off-grid projected direct connections; Unit #	70,000	0	0	0	0	0	70,000	PATRP will assist micro-grid and solar home-based businesses to scale and increase their share of the market.
Generation Capacity Pending Financial Closure; Unit MW	1,025	747.5	667	81.0	725	81	300	In FY 2016, PATRP added three solar, gas, and small hydro projects totaling 81 MW. Kenya has a large surplus capacity of 755 MW (48%), given the installed capacity of 2,341 MW and registered maximum peak demand of 1,586 MW. This has led to reluctance by GoK to issue Letters of Support that would support financial close. This seems to confirm that Government is actively reviewing cheaper power options, and also concerned about a potential oversupply of power in the medium term. PATRP will work with KenGen to advance geothermal projects in FY 2017.
Transactions Pending Financial Closure; Unit #	9	10	8	2	9	2	0	This indicator is directly linked to the indicator that shows MW Pending Financial Close above.
Generation Capacity Reached Financial Closure; Unit MW	240	310	310	0	0	0	240	PATRP advanced the Kipeto, Kesses I, and Eldosol transactions working with the GoK to finalize the Government Letter of Support which is the last major hurdle to financial close for these front-runner projects.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Transactions Reached Financial Closure; Unit #	0	1	1	0	0	0	0	This is related to the above indicator Transactions Reached Financial Close. We expect three projects will close in FY 2017.
Generation Capacity Commissioned; Unit MW	0	0	0	0	0	0	0	Construction of wind turbines at Lake Turkana is moving ahead, however the transmission line is not expected to conclude construction in FY 2017. PATRP will continue to advance and support the fast-tracking of this activity.
Utilization of Risk Mitigation Measures; Unit #	0	3	3	0		0	0	This indicator is directly linked to the indicator that shows MW Reached Financial Close above.
Training and Capacity Building Activities; Unit: Number of person hours trained	200	523	232	0	0	291	200	Training for FY 2016 included a KP solar PV study that will assist Kenya in designing its competitive procurement program and PPA workshop.
Policy; Unit # (Actions)	1	3	0	0	0	2	1	Select policy includes: ▪ Grid Codes ▪ Kenya Power Accession Agreement ▪ Transmission Service Agreement

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Kilometers of Power Lines that have reached Financial Close; Unit KM	0	436	0	436	0	436	0	Lake Turkana transmission line reached financial close and was not counted initially and so it is reflected in Q4.
Transmission Projects that have reached Financial Close; Unit #	0	1	0	1	0	1	0	This is directly related to the Km of Power Lines reached FC above.

Table 8-21: Liberia Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	131	121.5	0	121.50	121	121.5	10	PATRP is assisting two 121.5 MW of HFO units, and 17 MW of Biomass. PATRP will assist a 10 MW solar project in FY 2017.
Transactions Pending Financial Closure; Unit #	3	3	0	3	3	3	0	This indicator is directly linked to the indicator that shows MW Pending Financial Close.
Training and Capacity Building Activities; Unit: Number of person hours trained	100	0	0	0	100	0	0	PATRP will develop workshops throughout FY 2017 that will directly impact improved governance of the sector and assist GoL in negotiating these IPPs.

Table 8-22: Malawi Results Summary

Indicator Name		Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	181	0	0	0	81	0	100	Data captured under Southern Africa (81 MW) were reported in FY 2016 for two solar projects that will now undergo competitive procurement. PATRP assisted in developing the tender documents.
Transactions Pending Financial Closure; Unit #	2	0	0	0	2	0	0	2 solar transactions captured under Southern Africa.

Table 8-23: Nigeria Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Number of new grid and off-grid projected direct connections; Unit #	400,000	0	0	0	0	0	400,000	PATRP's BTG team will assist solar home systems and micro-grids to increase 100,000 new connections and the distribution team will assist in 300,000 new metered connections. This activity was initiated in late FY 2016 and results are expected for FY 2017.
Generation Capacity Pending Financial Closure; Unit MW	8,500	4,755	4,155	530	5,000	600	3,500	There are a number of projects that are pending QTAT approval (approximately 300 MW) to be made Active. In addition, the team added two additional technical advisors that will facilitate an increase in the pipeline of over 4,000 MW from NDPHC and NBET for FY 2017 allowing us to meet our cumulative targets.
Transactions Pending Financial Closure; Unit #	22	23	18	4	22	5	0	This indicator is directly related to the above generation capacity MW.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Reached Financial Closure; Unit MW	2,800	450	0	0	1,400	450	1,400	Azura Reached Financial Close. The QIPP project was delayed over a critical negotiation point. Up to this point, NNPC has insisted on either receiving either 15% carried interest or 49% equity stake in QIPP. This issue has been the major obstacle to QIPP initialing a PPA with NBET. 14 front-runner projects were delayed significantly by NBET and the Permanent Secretary, Ministry of Power over concerns related to tariffs. These delays will realistically move FC for these projects to Q3 2017.
Transactions Reached Financial Closure; Unit #	7	1	0	0	7	1	0	This indicator is directly linked to number of MW Reached Financial Close.
Utilization of Risk Mitigation Measures; Unit #	5	3	0	1	5	3	0	Azura required financial close risk mitigation tools: Political Risk, Partial Risk Guarantees and PCOA.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Training and Capacity Building Activities; Unit: Number of person hours trained	3,000	2,025.5	160	1,066	2,000	1,865.50	1,000	Training occurred for PPA and PCOA for government officials which has directly led to its further refinement and use for projects in the pipeline. The Distribution team has made significant strides in training management and technical staff on new policies and procedures which has directly led to increased revenue of 289 million Naira and loss reduction of average 11%.
Aggregate Losses-Abuja	7.3%	13%	0	13%	7.5%	13%	7%	Loss reduction in pilot areas of FCT South Region was better than projected, with losses down 13%.
Aggregate Losses-Eko Lagos	5.8%	12%	0	12%	4.5%	12%	7%	Loss reduction in pilot areas was better than projected, with losses down 12%.
Aggregate Losses-Benin	7.3%	7%	0	7%	7.5%	7%	7%	Loss reduction missed the target by half a percentage point due to communities targeting DISCO staff with losses down 7%.
Policy; Unit # (Actions)	3	26	5	19	3	21	0	Policy actions continued for the DISCO team improving the governance of distribution entities through improved procedures and operations; TCN procurement documents developed for transparency and improved tender process amongst other assistance that improves overall sector performance.
Policy; Unit # (implemented)	9	15	0	11	0	15	9	The DISCO team has had a number of successful policy actions that were implemented in each business area approved to be rolled out across DISCOs.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Kilometers of Power Lines pending Financial Close; Unit KM	977	0	0	0	977	0	0	The TCN scope was partially discontinued mid-FY 2016. Although the projects were assisted we did not have complete information to meet this target at the cancellation of this section of the scope.
Kilometers of Power Lines that have reached Financial Close; Unit KM	526	143	0	143	263	143	263	Second Benin Onitsha line was funded by 2nd Tranche AfDB facility and project was complete
Substation Capacity Added; Unit MVA	300	0	0	0	150	0	150	The key bottlenecks for ongoing projects are unpaid invoices, which has encouraged the contractors to demobilize. There remains a funding shortfall for all the projects, which will have to be addressed in the 2017 federal budget.
Transmission Projects that are pending Financial Close; Unit #	7	10	0	10	7	10	0	This Transaction Advisor is no longer focusing on these projects and the scope was discontinued mid-2016.
Transmission Projects that have reached Financial Close; Unit #	2	1	0	1	2	1	0	Second Benin Onitsha line was funded by 2nd Tranche AfDB facility and project was completed assisting in the evacuation of 211 MW.
Improved revenue at distribution companies; # of regularized customers	35,000	35,000	0	35,000	0	35,000	35,000	The DISCO team regularized 17,500 new customers and regularized an additional 17,500 customers that were connected but not in the billing system.
Additional revenue generated at DISCOs due to regularization of existing consumers; Unit Million Naira	209,101,000	289,000,000	0	289,000,000	0	289,000,000	209,101,000	In addition, collections for all three DISCOs based on our efforts amounts to Naira 1.5 billion for four months.
Transactions that improve Gas availability; Unit MMscfd	300	0	0	0	0	0	300	This assistance in FY 2017 will increase existing generation MW and advance projects to financial close that require negotiated gas supply agreements for financing.

Table 8-24: Rwanda Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	TA Narrative/Comments
Number of new grid and off-grid projected direct connections; Unit #	50,000	0	0	0	0	0	50,000	PATRP BTG team is assisting solar home systems and mini-grid operators to increase new connections through financing, improved marketing and working capital.
Generation Capacity Pending Financial Closure; Unit MW	295	189	0	189	295	189	0	TA has selected 195 MW in projects which represent the most viable projects in the pipeline for 2016. One of these projects will likely achieve financial close in early 2017. The TA will continue to advance remaining transactions and add new transactions to meet the cumulative target.
Transactions Pending Financial Closure; Unit #	3	14	0	14	3	14	0	This indicator is directly linked to MW Pending Financial Close.
Generation Capacity Reached Financial Closure; Unit MW	30	0	0	0	0	0	30	SO Energy at 30 MW is expected to reach FC in 2017.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	TA Narrative/Comments
Training and Capacity Building Activities; Unit: Number of person hours trained	384	747	0	747	192	747	192	The PATRP TA conducted capacity development on PPA development for micro hydropower projects and capacity building for EDCL staff/lawyers.
Policy; Unit # (Actions)	6	0	0	0	3	0	3	PATRP will develop Operational Planning and Dispatch Procedures for EUCL.

Table 8-25: Senegal Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	TA Narrative/Comments
Number of new grid and off-grid projected direct connections; Unit #	25,000	0	0	0	0	0	25,000	The PATRP BTG team are working with the Government of Senegal, a number of mini-grid, and solar home-based system operators and businesses to scale up and increase market penetration by 25,000 new connections in FY 2017.
Generation Capacity Pending Financial Closure; Unit MW	300	0	0	0	300	0	0	Government of Senegal was reluctant to provide sovereign and short-term guarantees. This situation slowed the process to reach FC for most of the projects involved in PPA negotiation. This issue has a direct effect on new projects entering the pipeline. PATRP expected additional gas and renewable projects, but Senelec's seeming preference for coal projects makes the market unattractive for investors.
Transactions Pending Financial Closure; Unit #	4	0	0	0	4	0	0	This indicator is directly linked to MW Pending Financial Close above.
Generation Capacity Reached Financial Closure; Unit MW	0	0	0	0	0	0		Government of Senegal was reluctant to provide sovereign and short-term guarantees. This situation slowed the process to reach FC for most of the projects involved in PPA negotiation. The situation is still problematic for a 158 MW project. FC was expected in 2016 but is now postponed until early 2017 and will appear in West Africa section.
Policy; Unit # (Actions)	1	0	0	0	0	0	1	PATRP will deliver the demand projections and generation masterplan in 2017.

Table 8-26: Tanzania Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Number of new grid and off-grid projected direct connections; Unit #	300	0	0	0	300	0	0	The REA TA will assist micro-grid developers to increase connections in FY 2017. Most isolated grids in Tanzania are owned by TANESCO and run diesel. Micro-grid developers are adding renewables to the mix with limited focus on connections. In addition, PATRP is assisting a number of donor-led programs that will lead to almost 250,000 new connections.
Generation Capacity Pending Financial Closure; Unit MW	3,370	1,671.124	26	1,644.807	3,050	1,645.124	320	Power Africa is assisting TANESCO in negotiations of a number of projects including review of agreements with private sector developers that total over 1,000 MW. PATRP support for two projects had to be withdrawn and have been subsequently removed from our pipeline. TANESCO has stated their interest in renewable energy auctions and this may affect the pipeline moving forward.
Transactions Pending Financial Closure; Unit #	7	20	5	14	7	15	0	This indicator is directly linked to MW Pending Financial Close.
Generation Capacity Reached Financial Closure; Unit MW	340	433.50	7.5	426	0	426	340	Kinyerezi I Expansion and Kinyerezi II reached financial close in FY 2016 and we expect a gas project to reach FC in early 2017.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Transactions Reached Financial Closure; Unit #	0	3	1	2	0	2	0	This indicator is directly linked to MW that Reached Financial Close.
Generation Capacity Commissioned; Unit MW	186	5	0	0	0	5	186	Tulila hydro was commissioned in FY 2016.
Transactions Commissioned; Unit #	1	1	0	0	0	1	1	This indicator is related to the above Commissioned MW.
Utilization of Risk Mitigation Measures; Unit #	0	1	1	0	0	0	0.00	This indicator is directly linked to MW Reached Financial Close and will be tracked and reported by PATRP but will not have targets for FY 2017. This indicator provides contextual assessment of the country or regional pipeline and aids in the analysis of the power sector health by providing an indication of the level of confidence investors have in a country by gauging the requirements for guarantees and other risk mitigation tools.
Training and Capacity Building Activities; Unit:	692	1,453	0	75	500	1,453	192	Training conducted for new Transmission Service Operator staff and government officials on financial modeling.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Number of person hours trained								
Greenhouse Gas Emissions Reduced; Unit Metric tons CO_{2e}	0	10,661	0	0	0	10,661	0	This indicator is directly linked to MW Commissioned, which was Tulila hydro.

Table 8-27: East Africa Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	200	49.7	7.5	42	200	42	0	PATRP is identifying additional projects for this pipeline over FY 2017. PATRP added a Bagasse, and two solar projects for 42 MW.
Transactions Pending Financial Closure; Unit #	1	4	1	3	1	3	0	This indicator is directly linked to MW Pending Financial Close.
Training and Capacity Building Activities; Unit: Number of person hours trained	320	0	0	0	320	0	0	PATRP will continue to meet cumulative targets of 320 person hours. These training topics/activities may include East Africa Power Pool training on the Interconnection Code Compliance, Essentials of Power Trading, Geothermal Drilling Regulations training, Developing Wheeling Agreements, and Power Trade Agreements (NELSAP) amongst others.
Policy; Unit # (Actions)	0	1	0	0	0	1	0	Completion of the draft EAPP Interconnection Code Compliance Program

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Policy; Unit # (implemented)		1	0	0		1	0	Adoption of the EAPP Interconnection Code Compliance Program
Kilometers of Power Lines pending Financial Close; Unit KM	9,103	0	0	0	9,103	0	0	This indicator is associated with NELSAP and EKTZ. Projects are under review and will be added to the pipeline in FY 2017.
Transmission Projects that are pending Financial Close; Unit #	0	0	0	0	7	0	0	This indicator is associated with NELSAP and EKTZ. Projects are under review and will be added to the pipeline in FY 2017.

Table 8-28: Southern Africa Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16 (Oct/15 - Sept/16)	Estimated Target FY17	Comments
Generation Capacity Pending Financial Closure; Unit MW	600	427	260	38	300	167	300	There are a number of projects under QTAT review and awaiting final approval (over 100 MW). These will be added to FY 2017. The numbers include Malawi, Zambia, and Namibia projects for FY 2016.
Transactions Pending Financial Closure; Unit #	3	9	3	3	3	6	0	This indicator is directly linked with MW Pending Financial Close.
Generation Capacity Reached Financial Closure; Unit MW	40	0	0	0	0	0	40	PATRP anticipates Wonderkop power project to reach FC in FY 2017.
Training and Capacity Building Activities; Unit: Number of person hours trained	0	75	0	0	0	75	0	PATRP performed Gender training in FY 2017 in South Africa.

Table 8-29: West Africa Results Summary

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16(Oct/15 - Sept/16)	Estimated Target FY17	Comments
Number of new grid and off-grid projected direct connections; Unit #	25,000	0	0	0	0	0	25,000	The PATRP BTG team is working with entities across West Africa on a number of mini-grid, and solar home-based system operators and businesses to scale up and increase market penetration by 25,000 new connections in FY 2017.
Generation Capacity Pending Financial Closure; Unit MW	5,350	7,370.8	1,480	515	5,000	5,891	350	This indicator contains a large number of pre-feasibility hydropower projects and will go under review for viability and realism in early FY 2017. PATRP deployed a second Transaction Advisor to the West Africa region in FY 2016. Based in Abidjan, Côte d'Ivoire, he quickly sought engagement on new projects and worked with public and private sector stakeholders, including the Ministry of Energy, DFIs, and local and foreign IPP sponsors, on ways Power Africa can support electricity development in the country. For instance, he actively worked with the local developer to advance the Tiassalé 25 MW run-of-river hydro project by providing guidance on raising funding and attracting strategic partners.
Transactions Pending Financial Closure; Unit #	40	57	10	5	40	47	0	This indicator is directly linked to MW Pending Financial Close.
Generation Capacity Reached Financial Closure; Unit MW	186	29	0	0	28	29	158	Senergy solar IPP reached financial close, and Taiba wind project is expected to reach FC in 2017.

Indicator Name	Total Targets Base Years (May/14 - Sept/17) & Expansion	Cumulative Actual (May/14 - Sept/16)	Actual FY15 (May/14 - Sept/15)	Q4-FY16-Total	Target FY16	Actual FY16(Oct/15 - Sept/16)	Estimated Target FY17	Comments
Transactions Reached Financial Closure; Unit #	1	1	0	0	1	1	0	PATRP will report results but will not have targets for FY 2017. This indicator provides contextual assessment of the country or regional pipeline and aids in the analysis of performance management of both the project pipeline health and the engagement level of the transaction and technical advisor.
Utilization of Risk Mitigation Measures; Unit #	0	1	0	0	0	1	0	Senergy solar IPP used a PRG to reach FC.
Kilometers of Power Lines pending Financial Close; Unit KM	0	3,009	0	3,009	0	3,009	0	The Km is for OMVS Manantali II (1300); and OMVG (1709)
Transmission Projects that are pending Financial Close; Unit #	0	3	0	3	0	3	0	Mali – OMVS Manantali: Benin – WAPP Interconnect; and OMVG